

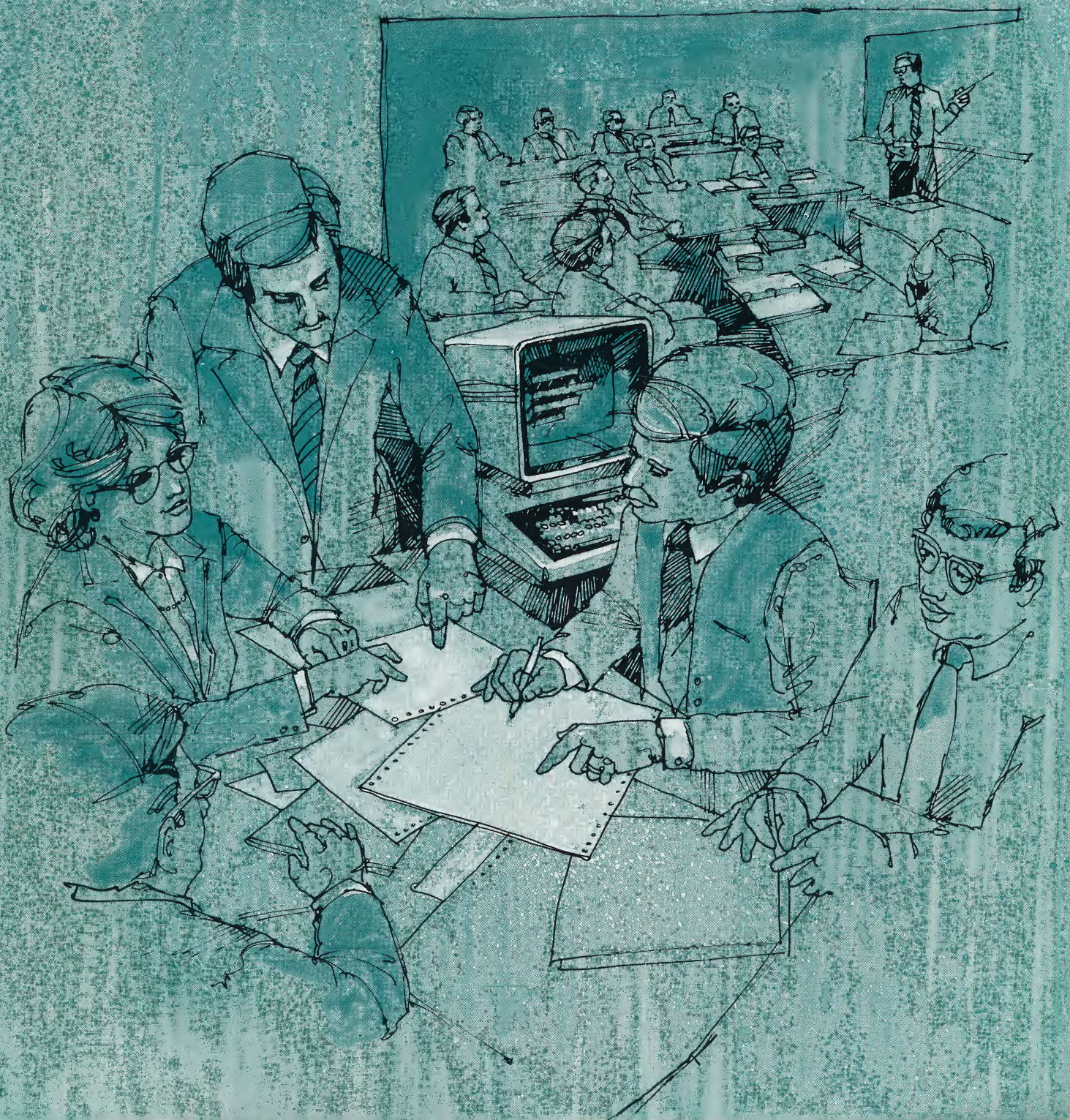
CATALOG OF PROFESSIONAL DEVELOPMENT SEMINARS

**September 1981
through
March 1982**

Seminars designed
to help improve
performance and
productivity

Sep 81
INSTITUTE FOR
ADVANCED
TECHNOLOGY

GD
CONTROL DATA
CORPORATION



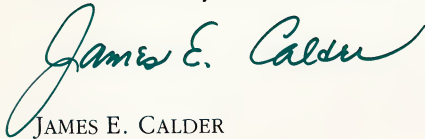
Dear Professional:

The Institute for Advanced Technology (IAT), part of Control Data Corporation, is one of the most highly respected organizations in the field of professional development. IAT has offered high-quality seminars for more than 15 years to over 50,000 professionals from business, industry, government, and the academic community.

IAT seminars provide a forum for exchange of objective information with leading consultants in specialized fields, as well as an excellent opportunity for participants to meet associates from other organizations to exchange ideas and solutions to problems. Each seminar is designed to help improve personal, as well as organizational performance and productivity.

The seminars are scheduled monthly in major cities across the country, and held in comfortable meeting rooms in conveniently located hotels.

Please take the time to acquaint yourself with our seminar offerings. I hope that IAT may be of service to you in your professional advancement.



JAMES E. CALDER
Manager
Institute for Advanced Technology

P.S. This catalog also contains information on a number of excellent seminars sponsored by IAT's "sister organization" Control Data Management Institute (CDMI). CDMI offers a broad range of seminars designed to improve the productivity and performance of management and supervisory level personnel — including secretaries who "manage." These seminars are described on pp. 26 thru 41 of this catalog.

Team Discount

For every three registrants from a single organization who register together and attend the same seminar, one additional registrant from the same organization can attend FREE. As an example, if one organization sends six individuals to the same three-day seminar, two additional individuals can attend FREE — representing a savings of as much as \$1,590 in tuition fees for the organization.

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REGISTRATION INFORMATION

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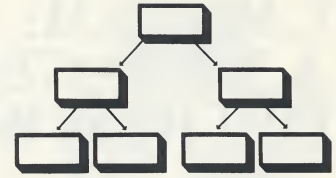
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ADVANCED PROGRAMMING TECHNIQUES



Purpose:

Until recently, advanced programming techniques focused exclusively on execution speed and core size. Things have changed during the past decade. Hardware has become faster, more reliable, more versatile, and cheaper. The same cannot be said for software. Today a state-of-the-art seminar on advanced programming techniques must address such issues as reliability measures and design control, as well as execution speed and core size, plus data structure manipulation techniques for today's larger data bases.

This seminar discusses structured programming, top down design, data structuring, testing techniques, and debugging techniques. It shows their relation to project development objectives, project control and cost control. This seminar **emphasizes those techniques which have been shown to be effective in today's business and scientific applications.**

Who Should Attend:

Programmers, analysts, designers, managers, engineers, scientists, business professionals — anyone who needs to produce, evaluate, or maintain state-of-the-art software, and to achieve a comprehensive understanding of today's programming techniques.

Program:

What is Programming?

- Terminology
- History
- Central Issues
- State of the Art

The Design Process

- The Design and Testing Spectrum
- Overview of the Design Process
- Module External Design
- Module Logic Design
- Structured Design
- Module Strength
- Module Coupling
- Levels of Abstraction
- Black Box-White Box Techniques
- Composite Design
- Module Decomposition Techniques
- Top Down Design
- Structured Programming
- Definition
- Fundamentals
- Stepwise Refinement
- Pseudo Code
- Chief Programmer Team
- Programming Style
- Defensive Programming

Testing Strategies

- Peer Code Reviews
- Test Case Design
- Higher Order Testing
- Walk Throughs
- Black Box-White Box Techniques

Debugging Strategies

- Debugging Tools
- Induction Techniques
- Deduction Techniques
- Common Bugs and Errors

Table Driven Systems

Data Structures

- Linear Structures
- Lists, Stacks, Queues, Deques
- Non-Linear Structures
- Trees, Graphs

Data Handling Techniques

- Sorting
- Searching
- List Processing
- String Processing

Module Relationships

- Coroutines
- Recursive Routines
- Re-entrant Routines

Program and System Optimization

- Hardware and Software Considerations
- Microefficiencies
- Macroefficiencies
- Checklist and Guidelines

Graphic Aids

- ANSI Flowcharts
- Structure Charts
- Data Flow Diagrams
- Decision Tables
- HIPO
- Warnier-Orr Charts
- Jackson Diagrams
- Nassi-Chapin Charts

Seminar Leader:

EDWARD V. BERARD is a consultant in business, scientific, social science and educational systems. His experience includes management, systems design and documentation, very large data bases, networking systems, code optimization, mathematical modeling, numerical analysis, benchmarking, graphics, and computer science education.

Dates and Locations:

Sept. 21-23, 1981 Chicago

O'Hare/Kennedy Holiday Inn
312/671-6350

**Sept. 30-
Oct. 2, 1981** **Minneapolis**
Rodeway Inn
612/854-3400

Oct. 19-21, 1981 **Anaheim**
Marriott
714/750-0800

Nov. 4-6, 1981 **Washington, D.C.**
Holiday Inn-Old Town
Alexandria
703/549-6080

Dec. 2-4, 1981 **New York**
New York Sheraton
212/484-3314

Jan. 18-20, 1982 **San Francisco**
Jack Tar
415/776-8200

Feb. 1-3, 1982 **Washington, D.C.**
Twin Bridges Marriott
202/628-4200

Mar. 8-10, 1982 **Atlanta**
Marriott Downtown
404/659-6500

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

CAD/CAM: A MANAGEMENT OVERVIEW



Purpose:

Computers have revolutionized the design and manufacturing process. Manufacturers from automotive, aerospace, electronic, and heavy equipment industries have cut design costs and improved product quality through the use of computer aided design (CAD) and computer aided manufacturing (CAM).

This 2-day seminar is an introduction to the philosophy and benefits of an integrated computer aided engineering, design, drafting, manufacturing and management process.

Who Should Attend:

Managers, engineers, manufacturing personnel, and technicians.

Special Feature:

The Manufacturing Engineering Certification Institute has approved this seminar for 12 Recertification Credits.

Program:

INTRODUCTION

Productivity

- Survey of U.S. productivity since 1940
- Compared to other countries today
- Effects on economy
- Turning it around

History

- Record storage
- Business data processing
- Engineering
- Manufacturing

Classical Methods

- Engineering
- Manufacturing

Organizations

- CAM-1
- IPAD
- IGES
- ICAM

COMPONENTS AND DEFINITIONS

Hardware

- Computers
- Terminals
- Output devices
- Other hardware

Software

- Operating systems
- Applications packages
- General purpose programs
- Special purpose programs

Firmware

Accessibility

- In-house systems
- Time-share services
- Service bureaus

APPLICATION OVERVIEWS

Analysis and simulation

- Data collection
- Computer simulation
- Finite element methods

Drafting and documentation

- Disciplines (mechanical, electrical, etc.)
- Storage advantages (temporary and archival)
- Capturing knowledge for posterity

Manufacturing

- N/C, CNC, DNC
- Group technology
- MRP
- Unmanned factory

ECONOMICS

Justification

- Increase in productivity
- Return on investment

Evaluation and selection

- Task force
- Consultants
- Changing technology

Personnel

- Training
- Learning curves
- Hiring experienced personnel

Facilities

- Site-preparation
- Working environments
- Space requirements (planned growth)

Co-operative ventures

Seminar Leaders:

DR. NEAL P. JEFFRIES is Executive Director of the Center for Manufacturing Technology, a non-profit research and education center. He has served as Program Manager at General Electric Company, as Project Leader in the U.S. Air Force, and as Manager of Education at Structural Dynamics Research Corporation. Dr. Jeffries was also a professor teaching engineering and management courses at the University of Cincinnati after completing degrees at Purdue, Stanford and the Massachusetts Institute of Technology.

ROBERT E. CROWLEY, manager of Automated Design Services, Structural Dynamic Research Corporation (SDRC), is also a computer consultant for the Center for Manufacturing Technology. Mr. Crowley has experience in computer systems at McDonnell-Douglas and General Electric, in numerical control at Cincinnati Milacron, and in teaching computer systems at San Jose State. He is also a registered professional engineer and a certified manufacturing engineer and has taught many classes and seminars in computer graphics.

Dates and Locations:

Sept. 21-22, 1981 Washington, D.C.

Twin Bridges Marriott
202/628-4200

Oct. 5-6, 1981 Chicago

Holiday Inn-Chicago City Centre
312/787-6100

Nov. 16-17, 1981 Houston

Stouffer's Greenway Plaza
713/629-1200

Dec. 7-8, 1981 Washington, D.C.

Holiday Inn-Bethesda
301/652-2000

Jan. 25-26, 1982 Los Angeles

Amfac At LA Int'l Airport
213/670-8111

Feb. 24-25, 1982 Houston

Stouffer's Greenway Plaza
703/629-1200

Mar. 22-23, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:

\$390 per person if payment is received by IAT prior to start of seminar, or \$435 per person if IAT invoices after seminar.

Effective January 1, 1982

\$435 per person if payment is received by IAT prior to start of seminar, or \$485 per person if IAT invoices after seminar.

COMPUTER OPERATIONS MANAGEMENT



Purpose:

Because of the organization's increasingly deep dependence on EDP, as well as the growing complexity and cost of EDP, management is deeply concerned that the computer operations area is effectively managed.

This seminar covers **practical tools, techniques and procedures which have been effectively used to manage the computer operations area.**

Who Should Attend:

Managers, supervisors, and staff personnel working in a computer center. It is also for individuals responsible for sections that work closely with the computer center, as well as senior programmers and senior analysts.

Program:

The Role of Computer Operations Management

- The objectives and attitudes
- The responsibilities at all levels

Defining the Objectives of the Computer Operations Area

- Fulfilling service commitments — Normally stated as "Response" and/or "On-Time Delivery" of a quality product
- Service to the user community
- Using operations resources in an effective manner
- Increasing the effectiveness of the operations organization

The Implementation of Systems & Procedures Within Computer Operations

- To establish the user communities' true requirements
- To insure the greatest probability of fulfilling those requirements
- Procedures to effectively interface with the user
- User Oriented Procedures Specified
 - Computer operations involvement in new applications
 - Computer operation procedures relative to on-going production
 - Reporting procedures relative to production

- Procedures to Effectively Interface with the Systems Design and Programming Group
- Programming Group Procedures Specified
 - Testing and Turnover
 - Production/quasi production
 - Documentation
 - Tape/disk standards
 - Standards for effective multi-programming
 - The remote terminal environment

Effective Management of the People Resources

- Motivating people — increasing the desire to work and do a quality job
- Planning the career path
- Job enrichment/training
- Proper and effective evaluation and interview techniques
- Management role in establishing an effective working environment
- Handling the problem employee

Establishing the Effective Computer Operations Organization

- Base philosophy "Accountability"
- Span of control
- Achieving accountability within different organizational structures
- Minimization of movement
- Minimization of dual control
- Effective work station layout

Effective Workflow

Management & Control

- Production Control/Data Control
 - Establishing a data control system
- Production control/data control reporting systems
- Work-in-process reports
- Production status reports
- Failure reporting
- Failure tracking
- Report analysis
- Installing effective controls

- Effective Production Scheduling
 - Production scheduling function
 - Machine interface
 - Data center user interface
- Effective data center scheduling
 - Production planning
 - Automation data center scheduling
- Effective machine scheduling
- Analysis of EDP systems performance
- Productive use of the machine resource analyzed

Measuring Operations Management's Effectiveness

- Productivity Reporting
- Cost Reporting

Seminar Leaders:

This seminar has been designed for IAT by L. Kreuter Associates, a consulting firm providing services to such notable companies as Western Electric, IT&T, Mobil Oil and Bell Telephone Company as well as the United States and Canadian governments. Each seminar will be conducted by an associate of L. Kreuter Associates. Among them are Leonard Kreuter, Leonard Palmer, Thomas Farello and Dan Artibee.

Dates and Locations:

Sept. 21-23, 1981 Washington, D.C.

Guest Quarters Alexandria
703/370-9600

Oct. 12-14, 1981 San Francisco

Amfac Hotel, S.F. Int'l
Airport
415/347-5444

Nov. 16-18, 1981 New York

Biltmore
212/661-1717

Dec. 14-16, 1981 Washington, D.C.

Twin Bridges Marriott
202/628-4200

Jan. 18-20, 1982 Chicago

Palmer House
312/726-7500

Feb. 8-10, 1982 Atlanta

Dunfey
404/351-6100

Mar. 15-17, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Tuition:

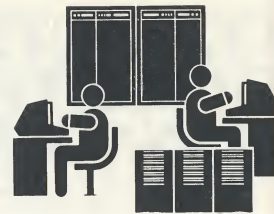
Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

COMPUTER PERFORMANCE MEASUREMENT AND CAPACITY PLANNING



Purpose:

Today's EDP system is made up of a series of resources capable of simultaneous operation. Optimum system performance is achieved when a maximum number of these resources are used simultaneously.

How much unused capacity exists within your system? Have you the right equipment mix tied together correctly? Which resources are heavily loaded and represent possible blocks to productivity and response? What can be done to optimize an individual program and overall systems productivity? How can you make better use of your EDP resources?

To help provide answers to these questions, a series of tools and techniques have been developed to study the internal activity of systems and examine systems performance.

In this 5-day seminar, attendees will discuss and work with these latest tools and techniques, analyzing the data they provide and formulating action plans **aimed at increasing systems productivity and performing capacity planning.**

Attendees should bring calculators to the seminar.

Who Should Attend:

Systems, technical, and operating personnel through top information processing management who are concerned with evaluating the usage of the EDP resources, as well as those responsible for the implementation of programs to improve that use.

Program:

The Goals of Capacity Planning The Major Elements to be Specified in Defining An Installation Capacity Plan

- Establishment of the Current Use of the EDP Equipment
- Resource on a Major Component Basis Specifying:
 - Capacity Currently Used
 - Capacity Available for Use

- Establishing Near and Long-Term Workload Specifying Growth and Service Commitments
- Defining Forecasted Resource Load

Defining the EDP Equipment Resource Via the Use of Computer Performance Measurement

- Suggested Measurement Counts to Use
- Understanding the Functional Capability and Capacities of Major System Resources
- Profiling Your EDP System
- The Overloaded CPU
 - Determining Overload
 - Operating System: Application Programs Ratio
 - Excessive Operating System Calls
 - CPU-I/O Execution
 - Overload Mixes
- The Overloaded/Underloaded Disk Sub-system
 - Determining Point of Overload
 - Space Management
 - Disk Balancing
- The Overloaded/Underloaded Magnetic Tape Sub-system
- Systems Resource Balancing

Case Study Involving Computer Performance Measurement to Establish a Capacity Planning Base

(A Review of Live Computer Performance Measurement Data from an Installation: The Workshop Will Carry Out a Complete Step-by-Step Analysis of the System)

- CPU Analysis
 - Determining Available Capacity and the Optimum Number of Jobs
 - Improving Productivity
- Magnetic Tape Analysis
 - Operator Response to Mounts
 - The Correct Number of Drives
- Disk Sub-system Analysis
 - Defining and Balancing the Network
 - Specifying Problem Disks
- Memory Analysis
 - Improving Performance

Application of Measurement Analysis and Capacity Planning Techniques to a Series of Case Studies Using Live Data

The Generation of a Capacity Plan

- The Application of Forecasted Use to the Defined Usage Base
- Estimating Component Life and Evaluating Alternatives

Seminar Leaders:

This seminar has been designed for IAT by L. Kreuter Associates, a consulting firm providing services to such notable companies as Western Electric, IT&T, Mobil Oil and Bell Telephone Company as well as the United States and Canadian governments. Each seminar will be conducted by an associate of L. Kreuter Associates. Among them are Leonard Kreuter, an internationally known expert on computer performance measurement and capacity planning, William Ward, Thomas Farello and Leonard Palmer.

Dates and Locations:

- Sept. 14-18, 1981 San Francisco**
Sir Francis Drake
415/392-7755
- Oct. 5-9, 1981 Chicago**
Holiday Inn-Chicago City Centre
312/787-6100
- Oct. 19-23, 1981 Houston**
Ramada Inn-Greenway Plaza
713/528-6161
- Nov. 16-20, 1981 Washington, D.C.**
Key Bridge Marriott
703/524-6400
- Dec. 7-11, 1981 Minneapolis**
Rodeway Inn
612/854-3400
- Dec. 14-18, 1981 New York**
Biltmore
212/661-1717
- Jan. 25-29, 1982 San Francisco**
Jack Tar
415/776-8200
- Feb. 1-5, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000
- Mar. 22-26, 1982 New York**
New York Sheraton
212/484-3314

Tuition:

Through December 31, 1981:

\$750 per person if payment is received by IAT prior to start of seminar, or \$795 per person if IAT invoices after seminar.

Effective January 1, 1982

\$795 per person if payment is received by IAT prior to start of seminar, or \$845 per person if IAT invoices after seminar.

DATA AND SITE SECURITY



Purpose:

Over the past 10 to 15 years the computer has gone from a position of clerical replacement to one of problem solving at the very heart of an organization.

In brief, organizations require their computer and the instantaneous information it provides to carry out basic day-to-day functions, virtually "going out of business" when the data is not immediately available.

Acknowledging the above, it is clear your computer and the data it possesses are among your organization's most important and valuable assets.

- Is the site and system properly secured against accidental and/or intentional breach?
- If the systems are breached, how quickly can they be recovered?
- Do the necessary controls exist to disclose that a breach has occurred?

This 3-day seminar covers state-of-the-art techniques available to:

- Ensure against intentional or accidental breach in systems, and systems and program design;
- Reduce the impact when a breach occurs;
- Prevent unauthorized availability of information and file damage;
- Ensure that proper controls exist to permit effective control of processing, files and information contained within files so that breach can be readily identified.
- Discuss the latest concepts and techniques associated with site security and their effective implementation.
- Explore the necessary audits and controls required to ensure the integrity of the installation and its data.

Who Should Attend:

Data processing management supervisory and staff personnel, for the purpose of understanding the levels of security which should be implemented at a site.

Systems designers, for the purpose of understanding security and control techniques which should be implemented at the systems design level.

Internal and external auditors, for the purpose of establishing a security checklist.

Program:

Securing Installation Data

Technical Aspects — a discussion of the levels of security available and their effective implementation.

Verification of User ID to System

Passwords

Verification by Interaction

Verification of System Components to User

Physical Verification

Dynamically Changing Verification

Data Access Authorization

Hierarchical Levels of Authorization

Access Type Limitation

Data Value Limitation

Limitation on Extractable Information

Software Enforcement

Authorization

Software Encryption

Cryptography

Substitution Cyphers

Transposition

Cost of Encryption

Hardware Encryption

Hardware Requirement for On-line Systems

Hardware Devices

Encryption Standards

Systems Software

Security Problems in Current Operating Systems

- User Accessibility to System Information
- Residual Information

• Chronological Information

Security Problems in System Utilities

- Cost of Retrofitting
- Security Oriented System Software Design

System Architecture and Hardware

- Mini Computers Security Monitors
- Micro Processor Monitors at the Device Level

• Machine States

• Hardware Memory Protection

• Memory Management

• Capabilities

Extraction of Information

- Exact Information
- Statistical Information

Securing the Site

Laying out the machine room

Levels of Security

Systems in Use

Administrative Control

Analysis of Risk

Insuring Security via

Audit & Control

Scope of Audit

Types of Audit

Audit During System Development

Audit Provisions in Systems Design

Built-in Auditing Features

Threat Monitoring Features

Audit Tools

Test Decks

Parallel Simulation

Software Packages

Audit Trails (Logs)

Content

Use to User

Use to Administrator

Measures of Performance

Seminar Leaders:

This seminar has been designed for IAT by L. Kreuter Associates, a consulting firm providing services to such notable companies as Western Electric, IT&T, Mobil Oil and Bell Telephone Company as well as the United States and Canadian governments. Each seminar will be conducted by an associate of L. Kreuter Associates.

Dates and Locations:

Sept. 28-30, 1981 New York

New York Sheraton
212/484-3314

Nov. 4-6, 1981 San Francisco

Holiday Inn-Union Square
415/398-8900

Feb. 17-19, 1982 Washington, DC

Holiday Inn, Old Town
Alexandria
703/549-6080

Mar. 31-April 2, 1982 Chicago

Holiday Inn City Centre
312/787-6100

Tuition:

Through December 31, 1981:

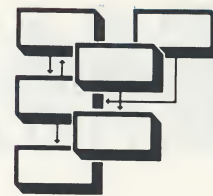
\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

6 *To Register, Call Toll Free 800-638-6590 between 9:00 a.m. and 5:00 p.m. Eastern Time (In Maryland, 301-468-8576)*

DATA BASE CONCEPTS, STRUCTURES & ACCESS METHODS



Purpose:

Perhaps the most pressing problem in the effective use of computers today is that of organizing data to be responsive to the varied requirements of users and systems. This seminar directly addresses the use of Data Base Management Systems technology in attacking this problem.

The seminar provides an in-depth study and analysis of the internal functions and processing characteristics of current access methods and data structures of both generic and data base management systems. Analytic models are discussed in detail so that systems analysts and data base designers might evaluate trade-offs in systems and data base development.

In addition, current Data Base Management Systems are classified along with the characteristics, advantages, and disadvantages of each type discussed so that attendees are provided with a meaningful perspective of the data base world.

Who Should Attend:

Data processing managers, systems analysts, and data base designers, as well as programmers concerned with the effective relationship of programs, data, and the computer itself. The participant in this seminar should have a firm appreciation of essential data processing techniques.

Program:

The Data Base Environment

- Information Systems: Feasibility — Why They Fail!
- Event (Transaction) Driven Systems
- Role of Data Base in Information Systems Development

Methods of Access

- Concepts of Physical and Logical Data Structures
- Sequential Processing
- Direct Access: Characteristics and Constraints
- Randomization/Key Transformation
- Directories/Indexing

- Generic Indexing Methods
- Multi-Key/Multi-Level Indexing
- Update and Retrieval Strategies
- Optimization and Space Management
- DBMS Index Implementations
- Indexed Random
- Inverted Files/Indexing
- Strategies and Essential Functions
- Operational Environment
- Bit Vector/Bit Matrix
- Concepts and Characteristic of Bit Processing
- Usage of Bit Profits and Masking
- Multi-Attribute Processing with Inverted Indexing

Data Structures/Information Paths

- Imbedded Link Structures
- Pointer/Link Relationship
- Multi-Level Integrated Data Structures
- Analysis and Optimization of Link Structures
- Analysis of DBMS Implementations
- Indexed/Inverted Index Data Structures
- Support of Network and Hierarchical Relationships
- Analysis and Optimization
- Update vs. Retrieval Bias in Multi-Key Indexed Relationships
- Analysis of DBMS Implementations
- Comparative Analysis of Data Storage Strategies
- Conditional Request Strategies
- Conditional and Directed Search
- Conditional Retrieval
- Comparative Analysis of Implementation Strategies

Physical Data Storage Considerations

- Space Management/Allocation Strategies
- Vertical vs. Horizontal Distribution
- The "Place Near" Option
- Update/Deletion Strategies — Recovery of Space
- Buffer Control

Data Base Management Systems

- Definition of Terms
- Objectives of Data Base Management Systems
- The Data Base Task Group Report (CODASYL/DBTG)
- Components of the DBMS
- Classification and Principal Characteristics of Current Data Base Management Systems
- Associated Software
- Data Dictionary/Directory Systems
- Transaction Control Systems
- Report Generation/Query Systems
- DBIOC — Data Base I/O Controller

Seminar Leaders:

This seminar has been developed for IAT by DBD Systems, Inc., a data base consulting firm. Each seminar will be conducted by a senior staff member of DBD.

Dates and Locations:

- | | |
|-----------------------------------|---|
| Sept. 30-
Oct. 2, 1981 | Washington, D.C.
Holiday Inn-Bethesda
301/652-2000 |
| Nov. 4-6, 1981 | San Francisco
Sir Francis Drake
415/392-7755 |
| Dec. 7-9, 1981 | Atlanta
Marriott Downtown
404/659-6500 |
| Jan. 25-27, 1982 | Atlanta
Dunfey
404/351-6100 |
| Feb. 22-24, 1982 | New York
NY Sheraton
212/484-3314 |
| Mar. 22-24, 1982 | Denver
Marriott Southeast
303/758-7000 |

Tuition:

Through December 31, 1981:

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Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

To Register, Call Toll Free 800-638-6590 between 9:00 a.m. and 5:00 p.m. Eastern Time (In Maryland, 301-468-8576)

DATA COMMUNICATIONS: COMPONENTS, SYSTEMS AND NETWORKS



Purpose:

This seminar gives a practical introduction to data communications by cutting through the buzzwords that have become an integral part of the industry. Individual components are described as well as their interaction in networks. Although ideal for the beginner, the seminar will also be helpful to those with some data communications background.

Upon completion of this seminar, attendees will be able to deal more effectively with vendors and carriers. They will also have the skills needed to convert user needs into functional systems.

Who Should Attend:

EDP managers, systems analysts, operations personnel, communication programmers and anyone new to the field.

Program:

Lines and Channels: Channel Bandwidth, Analog vs Digital Transmission. 2 Wire/4 Wire Lines. Transmission Impairments. Conditioning.

Signal Conversion Devices: Modems/Line Drivers. Modulation Techniques. Bits vs Bauds. Sync vs Async. Speed/Cost Relationships.

Terminals: Non-Intelligent. Intelligent. Pollable/Addressable. Clustered. Peripheral Attachments.

Interface Standards: RS-232-C. RS 449. Current Loop. Data Access Arrangements (DAA's). Standards Organizations (CCITT, EIA).

Line Sharing Techniques: Frequency Division Multiplexing. Time Division Multiplexing. Statistical Multiplexing. Concentrating. Polling. Modem/Port Sharing.

Network Architectures: Dedicated/Switched. Point-Point/Multipoint. Centralized/Distributed. Dial up/Polled.

Packet Switching: Comparison With: Dedicated Networks, Circuit Switching. Protocols. Present and Proposed Networks. Price/Performance Considerations.

Codes and Error Control: Baudot, ASCII, EBCDIC, others. Echoplexing. Vertical Longitudinal Redundancy. Cyclical Redundancy. Detection — Retransmission (ARQ). Forward Error Correction.

Line Control Procedures: Asynchronous Protocols. Synchronous Half-Duplex Protocols (Bisync). Synchronous Full-Duplex Protocols. SDLC/HDLC. DDCMP. X.25. Flow Control. Throughput Comparison of Protocols.

Central Site Hardware: Line Adaptors. Channel Multiplexors. Front Ends.

Communications Software: Message Buffering. Code Conversion. Dialing and Polling. Queueing. Restart/Recovery. Statistics Gathering.

Carriers and Services: Common Carrier Services. (AT&T, Western Union). Specialized Common Carriers. (MCI, SPCC). Value Added Networks (Telenet, Tymnet).

Future Services: AT&T (ACS). I.B.M. (SBS). Xerox (XTEN). **Communications Media:** Radio Microwave. Copper Wire. Coaxial Cable/Fibre Optics. Satellites.

Regulatory Agencies: State and Federal Regulation. Tariffs. Interconnection.

Network Design: Performance Criteria. Redundancy and Reliability. Cost/Performance Trade-Offs. Planning for Growth. Evaluating Alternatives.

Network Monitoring and Control: Evaluating Performance. Fault Isolation and Restoration. Network Monitoring Equipment. Building a Network Management Center. Software Diagnostics.

Seminar Leaders:

GARY ZIELKE is Director of Data Communications for Consultec, telecommunications consultants to business and industry.

RICHARD PARKINSON is a senior consultant with Consultec.

Sept. 14-16, 1981 Houston

Stouffer's Greenway Plaza
713/629-1200

Sept. 30- Oct. 2, 1981

San Francisco
Holiday Inn-Union Square
415/398-8900

Oct. 6-8, 1981

Minneapolis
Rodeway Inn
612/854-3400

Oct. 26-28, 1981

Washington, D.C.
Tyson's Corner Marriott
703/734-3200

Nov. 4-6, 1981

Atlanta
Marriott Downtown
404/659-6500

Nov. 16-18, 1981

Denver
Writer's Manor
303/756-8877

Dec. 1-3, 1981

Minneapolis
Rodeway Inn
612/854-3400

Dec. 7-9, 1981

Washington, D.C.
Holiday Inn-Bethesda
301/652-2000

Dec. 16-18, 1981

Orlando
Orlando Marriott
305/351-2420

Jan. 20-22, 1982

New York
NY Sheraton
212/484-3314

Feb. 17-19, 1982

Los Angeles
Hyatt Wilshire
213/381-7411

Mar. 9-11, 1982

Washington, DC
Holiday Inn Bethesda
301/652-2000

Tuition:

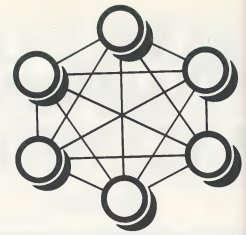
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Effective January 1, 1982

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DATA COMMUNICATIONS NETWORK DESIGN



Purpose:

This seminar is designed for people who already have an understanding of basic data communications and who require a more detailed appreciation of the design aspects of data communications networks.

Participants will be guided through the formulation and solution of some of the more common design problems such as the layout and optimization of multipoint terminal networks, the placement and sizing of multiplexors or concentrators in centralized networks and the access to packet networks.

Participants will also learn the methods used to configure and optimize distributed and dial up networks. Network throughput and reliability are not overlooked. Participants will be given the analytical tools needed to determine and act upon these important factors.

By the end of the seminar, attendees will be able to **evaluate and optimize existing networks as well as develop new network configurations**. They will also be able to interface more effectively with consultants or service organizations who are providing a design service on a contractual basis.

Who Should Attend:

This course will be ideal for systems personnel who are faced with either the design of a new network, or the evaluation and optimization of an existing network. It will also be helpful to those organizations who are using or considering using packaged design programs and desire an understanding of the accepted techniques used to configure and optimize networks.

Program:

Network Structures: Volume or Time Dependent. Point-Point. Multipoint. Multiplexor/Concentrated. Distributed.

Network Design Using Queuing Models: Basic Queuing Theory. Application to Network Design. The M/M/1 Model. The M/G/1 Model. A Modified Polling Model. Assumptions and Cautions.

Network Design Using Simulation Models: Simulation Languages. Defining the Network Model. Coding the Network Model. Testing the Network Model. Comparing Simulation and Queuing Results.

Network Throughput Analysis

Determining Information Throughput on the Basis of: Protocols. 2w/4w Lines. Modern Turn-around. Message Block Size. Modem Speed. Satellite versus Terrestrial Links.

Determining the Effect of Protocols on Network Performance and Response Time: Half Duplex versus Full Duplex. Line Held versus Line Released. Polling Mechanisms. Message Priorities.

Network Design Algorithms: The Heuristic Approach. Prim Algorithm. Kruskal Algorithm. Esau-Williams Algorithm. Kershbaum & Chou. Comparing Results.

Multiplexor/Concentrator Placement Algorithms: Drop Algorithm. Add Algorithm. McGregor & Shen Algorithm.

Access Techniques for High Bandwidth Networks: Pure Aloha. Slotted Aloha. Reservation Aloha. Time Division Multiple Access.

Distributed Networks: Routing Strategies. Network Layout and Optimization. Capacity Assignment. Network Delay Calculation. Network Access.

Dial-Up Networks: Calculating Number of Lines Required. Erlang B Network Model. Delayed versus Denied Access. Erlang C Network Model.

Multipoint Polled Networks: Calculating Message Statistics. Response Time Determination. Line Loading. Polling Overhead. Clustered versus Nonclustered Terminals.

The Effect of the CPU on Network Response Time: A Simplified CPU Model. Approximating CPU Processing Times.

Determining Line Costs: Determining Private Line Mileages. V&H Coordinates. AT&T's MPL Tariff. Inter versus Intra State Rates. Usage Sensitive Pricing.

Planning for Reliability and Availability: Network Redundancy. Dial Back-up. Reliability Analysis. Mean Time Between Failures (MTBF). Mean Time to Repair (MTTR). Calculating Availability of Multi Component Systems.

Seminar Leaders:

GARY ZIELKE is Director of Data Communications for Consultec, telecommunications consultants to business and industry. Mr. Zielke has worked with automobile manufacturers, national retail chains and governments at all levels, assisting them with their data communications needs. A gifted and popular speaker, he has spoken on the subject of data communications at DPMA, ASM and several major universities.

RICHARD PARKINSON is a senior consultant with Consultec. Mr. Parkinson has been involved in the telecommunications industry since 1966. His experience includes designing a 114-branch, on-line banking network, and defining the roles and structure of a very large insurance company's teleprocessing network.

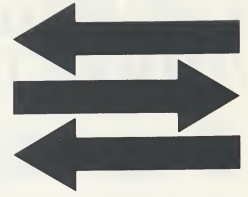
Dates and Locations:

Sept. 14-16, 1981	New York Biltmore 212/661-1717
Oct. 5-7, 1981	Anaheim Marriott 714/750-0800
Nov. 3-5, 1981	Washington, D.C. Holiday Inn-Bethesda 301/652-2000
Nov. 30- Dec. 2, 1981	Atlanta Hyatt Regency 404/577-1234
Jan. 26-28, 1982	New York NY Sheraton 212/484-3314
Feb. 2-4, 1982	Washington, DC Holiday Inn Old Town Alexandria 703/549-6080
Mar. 2-4, 1982	San Francisco Holiday Inn Union Square 415/398-8900

Tuition:

Through December 31, 1981:
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Effective January 1, 1982
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DATA COMMUNICATIONS SOFTWARE



Purpose:

This seminar teaches the practice of building data communications (dc) software. It shows the software features that dc software should have and explains why they are necessary. It develops a logical organization of dc functions and software modules based on the communications objectives of the dc software.

It teaches how to write data communications software and how to build in performance monitoring capabilities. It provides a systematic analysis of the protocols and data structures of today's telecommunications networks.

Who Should Attend:

This seminar is for programmers, systems analysts and managers who are building, modifying, or writing specifications for data communications systems. The attendees should already have an acquaintance with the basic *hardware* terms in data communications. This seminar shows how to build the software to use today's hardware to achieve tomorrow's network objectives.

Program:

The Importance of Data Communications Software

- Where data communications software is used
- Basic definitions

Familiar Kinds of Data

Communications Software

- Data link control
- Telecommunications access methods
- Communications packages and turnkey systems
- Network architecture

The Objectives of Data

Communications Software

- Device-oriented
- User-oriented
- Data-oriented
- Applications-oriented
- Network-oriented

Meeting the Objectives through Data Communications Protocols

- Hardware interface
- Data link control
- Message control
- Applications control
- Everything else

Functional Interpretation of Hardware Protocols

- Hardware interface
- Example: RS-232C, use and limitations
- Relationship to data link control

Functional Composition of Software Protocols

- Protocols, functions, modules
- Hardware-supporting functions
- Software-supporting functions

The Hardware-Supporting Functions

- Line functions
- Device functions
- Presentation functions

The Software-Supporting Functions

- Executive functions
- Directive functions
- Quality assurance functions
- Intersystem functions

Applications-Supporting Software Functions

- Message switching
- Remote job entry
- Timesharing
- Information retrieval
- Online update
- Transaction processing

Message Structure — Data and Control Information

- Information/text data
- Message control information
- Network control information

Network Control and Error Recovery

- Error recovery data structures
- Network control

Seminar Leaders:

MR. WILLIAM D. SKEES is President of Skees Associates Inc. He has twenty-four years' experience in the data processing field, and has been a consultant to government, military, and private industry on data communications networks. Mr. Skees is the author of "Computer Software for Data Communications" published by Lifetime Learning Publications.

MR. HENRY C. CLARK is a private consultant in the data communications field. His clients include General Dynamics, the U.S. Department of State, AT&T and Bell Labs. Mr. Clark has designed communications software for timesharing systems, message switching systems, information retrieval systems, and very large-scale distributed networks.

Dates and Locations:

Sept. 28-30, 1981 New York

New York Sheraton
212/484-3314

Oct. 14-16, 1981 Los Angeles

Marriott
213/641-5700

Nov. 2-4, 1981 San Francisco

Holiday Inn-Union Square
415/398-8900

Nov. 30-

Dec. 2, 1981

Washington, D.C.
Twin Bridges Marriott
202/628-4200

Jan. 25-27, 1982 San Francisco

St. Francis
415/397-7000

Feb. 8-10, 1982 New York

NY Sheraton
212/484-3314

Mar. 1-3, 1982

Washington, DC
Twin Bridges Marriott
202/628-4200

Tuition:

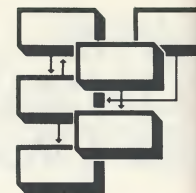
Through December 31, 1981:

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Effective January 1, 1982

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DATA DICTIONARY /DIRECTORY SYSTEMS



Purpose:

The implementation of Integrated Information Systems and the achievement of an environment of data resource management should be supported with a Data Dictionary/Directory System (DD/DS). The DD/DS is also the primary tool used for the administration and control of a data base environment.

This seminar addresses the practical use of a DD/DS as applied to specific user needs, examining alternate implementation strategies, detail functional and feature analysis and a survey of currently available DD/DS packages. Particular emphasis is given to the issue of integrating DD/DS with other data base software components, e.g., DBMS.

Upon completion of this seminar, the participant will not only understand the subject, but also be able to make decisions regarding the acquisition, design and integration of a DD/DS in his own data base environment.

Who Should Attend:

This course is for data processing management, data base administrators, data base designers and systems analysts — those individuals most concerned with effective management and use of the data resources in their organizations.

Program:

Introduction to DD/DS

- The DD/DS in a Data Base Environment
- Basic Objectives of a DD/DS Implementation
- The Data Base Administrator and the DD/DS
- The DBMS and the DD/DS

Functional Description of DD/DS's

- Data Entities of a DD/DS
- System Entities of a DD/DS
- Entity/Attribute Descriptions for a DD/DS
- DD/DS Input
- DD/DS Output
- Automated Interfaces
- Host Language
- DBMS

Feature Analysis of DD/DS

- Data Description Language
- Data Base Documentation
- META Data Generation
- Security and Integrity
- Report/Query Interfaces
- Resource Requirements
- Vendor Support

DD/DS Package Survey

- DBMS Dependent Systems
 - DB/DC Dictionary (IMS)
 - Integrated Data Dictionary (IDMS)
 - UCC-10 (IMS)
 - Total Dictionary (TOTAL)
- CONTROL 2000 (SYSTEM 2000)
- ADABAS Dictionary
- DBMS Independent Systems
 - LEXICON
 - Data Catalogue 2
 - DATAMANAGER

Implementation Strategy

- Make vs. Buy Decision
- Pre vs. Post DBMS Installation
- Data Collection for the DD/DS
 - Cost vs. Benefit
 - Retrofitting Existing Systems
- Administration and Control of the DD/DS

Seminar Leaders:

This seminar has been developed for IAT by DBD Systems, Inc., a data base consulting firm. Each seminar will be conducted by a senior staff member of DBD.

Dates and Locations:

Sept. 17-18, 1981 Washington, D.C.

Guest Quarters Alexandria
703/370-9600

Oct. 22-23, 1981 New York

Biltmore
212/661-1717

Nov. 19-20, 1981 Denver

Marriott
303/758-7000

Dec. 3-4, 1981 Washington, D.C.

Key Bridge Marriott
703/524-6400

Jan. 21-22, 1982 San Francisco

Sheraton Palace
415/392-8600

Feb. 4-5, 1982

New York
NY Sheraton
212/484-3314

Mar. 18-19, 1982 Washington, DC

Holiday Inn Old Town
Alexandria
703/549-6080

Tuition:

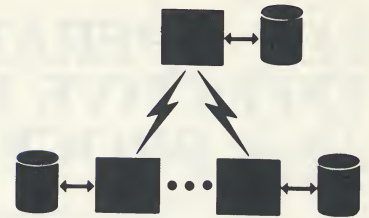
Through December 31, 1981:

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Effective January 1, 1982

\$435 per person if payment is received by IAT prior to start of seminar, or \$485 per person if IAT invoices after seminar.

DISTRIBUTED PROCESSING — A PRACTICAL GUIDE



Purpose:

Distributed Processing (DP) is a concept that offers great potential for improving the operational efficiency of an organization through the distribution of data processing functions where they can be performed most effectively. It is a concept that has come of age with declining hardware costs, improving communications and data base capabilities, and the growing sophistication of data processing users.

Distributed Processing is a concept that provides a large number of alternatives as to hardware, software, data communications and management controls.

This seminar has been designed to make attendees aware of the technical and economic tradeoffs of the many alternatives available, as well as the problems and pitfalls encountered to date in the design and implementation of distributed processing systems. The seminar will cover the decision factors concerning where to put intelligence and how to control the processing performed at these locations.

The seminar will cover various types of system configurations from both the standpoint of geography and type of equipment involved: from the microprocessor-based terminal, through minicomputers, and super-minis, all the way to the largest mainframes. Examples of typical installed and operating systems will be described, and the attendees will be encouraged to bring up questions relative to their own specific environments.

The material will be presented at a practical level in a non-technical manner so that a specific background knowledge of a particular area is not a prerequisite.

Who Should Attend:

This seminar has been designed to benefit those familiar with a DP environment as well as the novice. The user will review the various decision factors necessary for a DP system to operate at a maximum efficiency. Those contemplating the move to a distributed system will be provided with the background and operational framework for an effective evaluation.

The typical job functions which can most benefit from this system are System Analysts, Operations Managers and

Supervisors, Programmers in most disciplines, DP Managers and Directors, System Designers, Applications Supervisors, System Auditors, and all potential users of a distributed system.

Program:

Definitions of Distributed Configurations: Central Site Processing. Hierarchical Configurations. Remote Geographical Distribution. Functional Distribution on Separate CPU's. Shared Local Processing.

Primary Site Processing Considerations: Communications and Front-End Processing. CPU Chaining. Buss Connections. Front Door/Back Door Configurations. Large Mainframes vs. Multiple Minis and Micros.

Secondary Site Processing Considerations: Use of Remote Intelligence. Terminal Definitions by Processing Capability. Data Staging Techniques. Microprocessor Controllers. Offload of Central Overhead Processing.

Design Considerations: Distributed Data Base Tradeoffs. Operational Workload Leveling. Modular Expansion Planning. Software vs. Firmware Alternatives. In-house vs. Third Party Development.

Implementation Techniques: Transaction Processing. Down-Line Load Tradeoffs. Up-Line Load Controls. Storage Media Alternatives. Message Format Controls.

Processing Alternatives: Mainframes vs. Minicomputers. Vendors and their Products. Third-Party Systems and Services. Mini/Super Mini Architecture Types. Support Requirements. Microprocessor Controllers.

Operational Requirements: Management Decision Paths. End-User Requirements. Determination of Real Tradeoff Opportunities. Optimization of System Utilization. Control of Changes. Growth by Application. Personnel Requirements. Training Requirements.

Network Optimization: Types of Geographic Connectivity. Transaction Path Analysis. Transmission Speed vs. Actual Throughput. Configuring for Optimum Costs. Protocol-Type Tradeoffs. Response Time Evaluations. Control vs. Operational Interfaces. Network Management Techniques. Information Validation. Advantages/Disadvantages of Remote Intelligence.

Distributed Transaction Implementation: Inquiry Response. Data Entry. Data Collection. Record Update. Batch. Message Switching. Process Control. Command Control. Diagnostics. Formats for Distribution Control.

Management Controls and System Integrity: System Access Validation. Transaction Logging. Information Audit Trails. Security/Privacy Implications. Reporting Requirements. System Backup Alternatives. Recovery Procedures. Disaster Planning and Implementation. Overcoming Network Degradation.

On-Site Problem Analysis and Correction. Documentation Controls. Local vs. Remote Diagnostic Capability. Manual vs. Automated Network Control Methods. Environmental Impacts. Power Source and Grounding Problems. Required Personnel Expertise. Types of Service Organizations and Capabilities. Spares Management. Vendor and Communications Interfaces.

Future Implications

Seminar Leaders:

KENNETH SHERMAN

UYLESS D. BLACK

Dates and Locations:

Sept. 23-25, 1981 New York

New York Sheraton
212/484-3314

Oct. 14-16, 1981 Phoenix

Ramada Townhouse
602/279-9811

Nov. 4-6, 1981 Washington, D.C.

Holiday Inn-Bethesda
301/652-2000

Dec. 9-11, 1981 Chicago

Holiday Inn-Chicago City
Centre
312/787-6100

Feb. 24-26, 1982 Washington, DC

Twin Bridges Marriott
202/628-4200

Mar. 24-26, 1982 New York

New York Sheraton
212/484-3314

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

EDP OPERATIONS: EFFECTIVE PRACTICES AND PROCEDURES



Purpose:

The EDP area has always been subject to fast-moving change, all directed at performing the task better, faster, more accurately, and meeting deadlines at hopefully minimized costs. While change has been a watchword in all EDP areas, most recently the tempo in operation has picked up dramatically with new tools, techniques and procedures being implemented almost daily.

This seminar explores these new tools, techniques and procedures, and deals with the subsequent problems of their implementation, particularly the resulting necessary changes in organizational structures, functions and practices.

For those directly involved in the computer center, the objective will be a better understanding of what is currently available to achieve greater productivity. For those who interact with the computer center (programmers, end users, etc.), the objective will be better understanding of the procedures and overall requirements of the production-oriented environment.

Who Should Attend:

Data processing management, supervisory and staff personnel working in a computing center as well as those having significant interface with the computer operations area (programmers, analysts, etc.).

Program:

EDP Operations — The Production Facility

- Current Concepts
- Applying Production Line Philosophies to EDP Operations

The Hardware/Software Interactive System

- The Interrelationship and Parallel Working of System Resources
- The Operating System — Capabilities and Limitations
- The Requirement for Operations to Act as an Extension to the Operating System
- Requirements for Maximum Productivity

Advanced Operations Tools, Techniques and Procedures

- For the Operations Organization in Total
- For Management
- Implementing "cost effectiveness" programs
- Systems to remove "obsolete" work
- In Operations Training
- In Data Entry
- In Production Control
- For Production Scheduling
- In Direct Machine Operation
- For Magnetic Tape
- In Output Preparation

Automated Production Scheduling and Control

- Automated Production Scheduling
- Case Study of Implementation
- Automated Machine (Computer) Scheduling
- Case Study of an Automated Machine Scheduler

Performance Measurement and Operations

- Hardware and Software Measurement
- Feedback into Scheduling
- Feedback into JCL (Control Cards)
- Performance Evaluation

New Functions and How They Relate to Operations

- Resource Management Function
- Operations Systems Software Support
- Operating systems generation, maintenance adjuncts and alterations
- Standards enforced through operating systems
- The Program Maintenance Function

Seminar Leaders:

This seminar has been designed for IAT by L. Kreuter Associates, a consulting firm providing services to such notable companies as Western Electric, IT&T, Mobil Oil and Bell Telephone Company as well as the United States and Canadian governments. Each seminar will be conducted by an associate of L. Kreuter Associates. Among them are Leonard Kreuter, Dan Artibee, and Thomas Lackey.

Dates and Locations:

Sept. 21-23, 1981 New York

New York Sheraton
212/484-3314

Oct. 19-21, 1981 Washington, D.C.

Holiday Inn-Bethesda
301/652-2000

Nov. 18-20, 1981 San Francisco

Sheraton Palace
415/392-8600

Dec. 16-18, 1981 Chicago

Holiday Inn-Chicago City Centre
312/787-6100

Jan. 20-22, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Feb. 8-10, 1982 San Francisco

Jack Tar
415/776-8200

Mar. 8-10, 1982 New York

NY Sheraton
212/484-3314

Tuition:

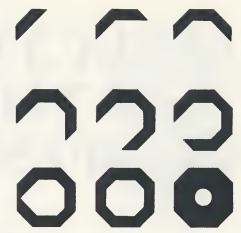
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EFFECTIVE MANAGEMENT OF PROGRAMMING PROJECTS



Purpose:

Programming project management skills have consistently been among those cited as "most needing improvement" within the software industry. Although improvement has been noted in recent years, software projects are all too frequently undertaken without sufficient problem analysis and project planning.

This seminar is designed to teach attendees a proven software development process. A wide variety of proven tools — measurement and management techniques — will be presented which will assist attendees in the establishment of a practical plan for building a software product and controlling implementation of that plan.

This seminar is presented in a teaching/workshop environment with active participation encouraged. Involvement in a class problem gives each attendee an opportunity to participate in developing a complete plan.

The information presented in this seminar will benefit attendees in developing software products which are delivered on time, within budget, meet technical goals, and are consistent with initial expectations.

Who Should Attend:

Managers, programmers and analysts who want to learn a proven, successful software development process and apply this process in actual practice in a class problem.

Program:

The Nature of Systems, Part I: The History of Software. The "Problem" System. The "Solution" System. The "Production" System. System Structures. Project Organizations.

The Nature of Systems, Part II: Software Life Cycle. The Development Cycle; Major Phases; Schedule Distribution; Cost Distribution.

The Definition Phase: Problem Definition. Analysis Techniques (overview). Baseline Documentation; Problem Specification; Project Plan.

The Project Plan: Planning Concepts. Project Plan Content. Risk Analysis. Change Control. Project tracking and reporting.

Class Problem Work: Team Assignment. Problem Discussion. Intra-Team Assignment. Assumptions.

The Design Phase: Top Down Design. Structured Design. Design Specification. Design Reviews.

The Programming Phase: Detailed Design. Documentation. Unit Test. Integration. Programming Concepts.

Class Problem Work: Problem Definition. Architectural Design. Phase Planning. Instructor Review.

Resource Management: Estimating Concepts. Programmer Production Rates. Productivity Factors. Estimating Methodology.

Class Problem Work: Plan Assimilation.

The Systems Test Phase: Testing Technology and Effectiveness. Test Types. Test Responsibilities. The Build Cycle. Test Planning. Test Plan Content.

Management Discussion: Leadership and Decision Making. Communications. Group Processes.

Class Problem Presentation: Review, Critique and Joint Question Session.

Seminar Leader:

PAUL HUNTWORK is a senior consultant of Advanced Technical Seminars with over 18 years experience in software development. He was part of the design team for large scale operating systems, computers and data base management systems. His applications

experience includes 1 ½ years of aerospace development projects as well as consulting with scientific and commercial customers.

DAVID LAUGHLIN is a senior consultant of Advanced Technical Seminars with over 19 years experience in business applications of software development. He has participated in and managed every segment of the software development process from programming to data processing manager including analysis, design, development, testing and implementation.

Dates and Locations:

Sept. 14-18, 1981 San Francisco

Jack Tar
415/776-8200

**Sept. 28-
Oct. 2, 1981**

Washington, D.C.
Holiday Inn-Old Town
Alexandria
703/549-6080

Nov. 16-20, 1981 New York

Biltmore
212/661-1717

Dec. 14-18, 1981 Washington, D.C.

Holiday Inn-Old Town
Alexandria
703/549-6080

Jan. 25-29, 1982 Los Angeles

Amfac at LA Int'l
Airport
213/670-8111

Feb. 8-12, 1982 Atlanta

Colony Square
404/892-6000

Mar. 8-12, 1982 Washington, DC

Twin Bridges Marriott
202/628-4200

Tuition:

Through December 31, 1981:

\$750 per person if payment is received by IAT prior to start of seminar, or \$795 per person if IAT invoices after seminar.

Effective January 1, 1982

\$795 per person if payment is received by IAT prior to start of seminar, or \$845 per person if IAT invoices after seminar.

EFFECTIVE WRITING FOR THE DATA PROCESSING PROFESSIONAL



Purpose:

Today's DP professional spends much time in writing activities — from programs to test plans, from proposals to budgets — many of them calling for quite different planning, organizing and wording skills. Proven writing techniques and recently developed structured documentation methods can be applied to make the time spent in writing both easier and more effective.

This seminar covers all types of writing which DP professionals are likely to experience. It teaches methods of correspondence that get results. It shows how to conduct vendor surveys and requirement studies at minimal expense and under rapid turnaround conditions. It provides a structured approach to writing systems analysis and design documents for straight-forward, motivational expositions of findings and recommendations.

It shows how to make systems documentation easier using top-down methods. It also shows technically oriented DP professionals how to reach top management decision makers through well-organized presentations.

Who Should Attend:

This seminar relates successful writing methods to both technical and managerial writing in data processing. All levels of DP professionals will find the 3-day program beneficial.

Program:

Introduction: Purpose of the Course. Basic Principles of Effective DP Writing. Golden Rule of Authorship. Managing by Deliverables.

Types of DP Writing: Investigative. Promotional. Analytic. Developmental. Archival. Instructive. Directive.

Audiences and Their Needs: Management. Peers in Other Organizations. Peers in Foreign Countries. Vendors (Current and Prospective). Customers (Current and Prospective). Subordinates. Support Organizations (Comptroller, Personnel, Purchasing).

Correspondence Writing: Four S's of Correspondence. When Not to Write. Reorganization/Rewriting. Correspondence/Meetings. Electronic Correspondence.

Promotional Writing: Challenge of Challenging. Informing Without Giving Away or Giving Up. Proposals. Promoting Budgets.

Policy and Procedure Writing: Directives. Understandability. Action.

Studies and How to Write Them: Defining the Study. Basic Structure of Every Study. Managing the Fact-Finding Survey. Preliminary Writing. Farming Out. Top-Down Use of the Study. Managing Study Documents. Packaging. Style.

Written Management: Directives. Project Decisions. Administrative Matters.

Review of Writing Principles

Writing Analysis and Design

Documents: Utilizing the Study Documents. Readers. A&D Milestone Documents. Forms and Formats. Data Dictionaries. Presentational Extracts. Structured Design Products.

Planning and Project Management Writing: Project Data. Dynamic Data. Management Reporting.

Writing for the Record: Active and Passive Documents. Archival Records. Executive Summaries. Maintenance Documents.

Educational Writing: User Manuals. Operations Manuals. General Information Manuals. Detailed Logic — Organization and Presentation. Documentation of Performance Monitoring.

Interim Documents: Test Reports. Operations Logs. Transaction Records. Project Financials.

Writing for Publication: Academic. User Community.

Critique of Sample DP Writing and Review

Seminar Leaders:

WILLIAM D. SKEES, President of Skees Associates, Inc., is an internationally known consultant to management in automation and the computer sciences. Mr. Skees has written for the ACM Reviews, mathematical journals, and

various university and educational publications. His works have been referenced in proceedings of the U.S. Congress. Mr. Skees is the author of "Computer Software for Data Communications," published by Lifetime Learning Publications.

NORMAN L. ENGER is President of Applied Management Systems, Inc. He has written five books, including "Documentation Standards for Computer Systems" (Technology Press), as well as numerous articles in journals of computer and management science. His latest book is "Manager's Guide to Computer Security," published by the American Management Association.

Dates and Locations:

Sept. 14-16, 1981 Chicago

Holiday Inn-Chicago City Centre
312/787-6100

Oct. 26-28, 1981 Washington, D.C.

Holiday Inn-Old Town Alexandria
703/549-6080

Nov. 17-19, 1981 Los Angeles

Marriott
213/641-5700

Dec. 7-9, 1981 New York

New York Sheraton
212/484-3314

Jan. 25-27, 1982 Washington, DC

Twin Bridges Marriott
202/628-4200

Feb. 8-10, 1982 San Francisco

Sheraton Palace
415/392-8600

Mar. 1-3, 1982 New York

NY Sheraton
212/484-3314

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

MANAGEMENT CONTROL OF EDP COSTS



Purpose:

In these times of acute economic awareness, management has lost its awe of the computer and has begun to expect a more cost-conscious data processing environment where data center management and supervision are more cognizant of the techniques and systems used for cost analysis, cost control, cost estimating and cost distribution (charge back).

This two-day seminar will cover the many **factors that comprise cost analysis, control and distribution and discuss practical considerations in the development and implementation of an effective cost analysis and control system, as well as a cost distribution system.**

Who Should Attend:

Data processing managers, supervisors, and EDP personnel concerned with the control, documentation and reporting of EDP costs.

Benefits:

At the completion of this seminar, attendees will have:

- an increased appreciation of the factors and relationships which make up data processing cost;
- a greater understanding of the options available, as well as the requirements and difficulties involved in implementing more complete cost analysis and control systems;
- a greater understanding of the options available, as well as the requirements and difficulties involved in the implementation and maintenance of cost distribution (charge back) systems; and
- an understanding of the techniques used to accomplish better cost estimating and cost reduction in data processing.

Program:

Defining "Cost": Unit Cost. Standard Cost. Actual Cost: Allocatable Cost; Incremental Cost.

Information Basis for Cost Analysis: Labor Distribution. Hardware Utilization. Other Cost Elements. Cost Categories: Overhead; Indirect; Direct.

Cost as Resource Consumption: Quantifying Resources. Resource Consumption by Operation. Resource Consumption by Application. Resource Consumption by User.

Budgets: Line Items. Relationship to Production. Operating Pro-Formas. Planning and Projection. Actual versus Budget Analysis. Variable Budget Control.

Cost/Benefit Analysis: Estimating Project Cost. Estimating Production Cost. Actual versus Estimate Follow-Up. User/Programmer/Operations Contributions. Support for Proposals/Requests.

Cost as a Management Tool: Monitor Production Efficiency. Measure Operating Improvements. Direct Management Activity. Motivation for Users/Upper Management. Basis for Operating Audits.

Cost as a Planning Tool: Planning Inputs. Quantifying Production. Projecting Increased Requirements. Relating Demand/Cost Ratios. Planning Follow-up.

Cost Relationships: To Management Objectives. To Product Quality. To Levels of Support. To User Demand.

The Cost-Effective Operation: Improvement. Increasing Levels of Support. Lowering Unit Cost. Providing Correct Options. Directing Resource Allocation.

MIS for EDP Operations: Analysis of Application. Analysis of "Re-Runs." Indication of Effective Action. Creditability of Operations.

Seminar Leaders:

LEONARD PALMER is an independent consultant specializing in EDP and computer operations management. His more than 30 years' experience in data processing includes various operational, technical and management positions with Computer Service Centers, Inc., Sperry Rand Data Centers and Burroughs

Corporation. Mr. Palmer has published several texts on data center organization, management and control.

LEONARD A. KREUTER is the Senior Partner of L. Kreuter Associates, a consulting firm providing services to such notable companies as Western Electric, IT&T, and Mobil Oil, as well as the United States and Canadian governments. Prior to founding L. Kreuter Associates, he was Chief Operating Officer of E.L.I. Computer Timesharing Inc., and Regional Manager of the New York data center for CEIR, Inc./Control Data Corporation. Previously he was associated with the Burroughs Corporation in various management and technical positions.

Dates and Locations:

- Sept. 24-25, 1981 Washington, D.C.**
Guest Quarters Alexandria
703/370-9600
- Oct. 15-16, 1981 San Francisco**
Amfac Hotel, S.F. Int'l
Airport
415/347-5444
- Nov. 19-20, 1981 New York**
Biltmore
212/661-1717
- Dec. 17-18, 1981 Washington, D.C.**
Twin Bridges Marriott
202/628-4200
- Jan. 21-22, 1982 Chicago**
Palmer House
312/726-7500
- Feb. 11-12, 1982 Atlanta**
Dunfey
404/351-6100
- Mar. 18-19, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:

\$390 per person if payment is received by IAT prior to start of seminar, or \$435 per person if IAT invoices after seminar.
Effective January 1, 1982

\$435 per person if payment is received by IAT prior to start of seminar, or \$485 per person if IAT invoices after seminar.

Microcomputers In The DP Environment



Purpose:

This seminar will focus on the incorporation of microcomputers and personal computers into the design of mini and mainframe applications.

The mainframe analyst/programmer will now have a "better hammer" with which to solve data processing applications. Micros can serve as remote job entry stations or as stand-alone systems to off-load mainframe jobs.

The low cost and accessibility of these systems can bring data processing to the user on a timely basis and promote user satisfaction because the system is managed by the user.

Through programming, a microcomputer/personal computer can be made to emulate other devices or systems (2780/3780 RJE or 3270 terminals).

These systems can become a valuable asset to any DP department in supplementing mainframe power at the user level and providing low cost development tools to the programmer.

Unique Features:

The seminar lectures will be reinforced with problem exercises, handout materials, and *hands-on* exposure to microcomputer systems.

Who Should Attend:

This seminar is designed for both upper and middle management, system analysts, project managers, and design engineers, who will be responsible for the planning, development, and support of microprocessor based systems and sub-systems.

Participants' Performance Objectives

- Describe and define the minimum components of a microcomputer system
- Implement intelligent terminals using micros

- Use industry standards when interfacing micros to host systems
- Design applications for users by using personal computers
- Evaluate and select micros for system emulation (e.g., 2780/3780 RJE) or protocol conversion (e.g., 3270 CRT terminals).

Program:

Definition of Terms and Fundamentals

Definition of a Microcomputer/
Microprocessor
Overview of Microcomputer
Systems
Microcomputer Architectures

Microcomputer Architectures

How the principal parts integrate into
a system
Bus Structures
Register and Address Decoding
Structures
LSI Components
Input/Output Devices

Microprocessor Programming

Addressing Modes
Making the most of built-in
functions

I/O Scheduling Techniques

Support of Microprocessor Systems

Software Design Tools and Utilities
Compilers and Interpreters
Cross-compilers and Assemblers
Microprocessor Operating Systems
Microprocessor Development Systems

Analysis of Microprocessor Based Systems

Hardware/Software Requirements
Analysis
Hardware vs. Software Trade-offs
How Micros Can Interface to
Existing Systems
2780/3780 RJE Terminal Emulation
3270 Emulation
Micros as Front-End Controllers

Personal Computers

Users of personal computers in the DP
environment
Criteria for purchasing and using
personal computers
Popular personal computers and
features

Future Trends

Bubble memories
Hand-Held Computers
Graphics Applications
32-Bit Microcomputer Systems

Seminar Leader:

RAY PRYOR is president of Pryor Associates, a computer-based consulting firm in the Chicago area.

Mr. Pryor has over a decade of experience as an educator, systems analyst, and consultant. He has designed several computer-based control systems for industrial, medical, and military applications, and is an expert on both the hardware and software aspects of his field.

Mr. Pryor holds degrees in Computer Science and Electronics Engineering.

Dates and Locations:

Oct. 14-16, 1981 New York

New York Sheraton
212/484-3314

Nov. 4-6, 1981 Washington, DC

Holiday Inn Bethesda
301/652-2000

Nov. 30-Dec. 2, 1981

Atlanta
Colony Square
404/892-6000

Jan. 25-27, 1982 San Francisco

St. Francis
415/392-7755

Feb. 17-19, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Mar. 15-17, 1982 Los Angeles

Hyatt Wilshire
213/381-7411

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

PASCAL PROGRAMMING WORKSHOP

Featuring hands-on experience



Purpose:

Pascal has gained wide acceptance in the EDP community. For example, a recent survey of microprocessor users shows that Pascal is the most widely used high-level language. **Pascal reduces design time, maintenance costs, and programming errors.** These savings coupled with the low overhead and compactness of the language, make Pascal an ideal language for microcomputers, mini-computers, and larger mainframes as well. Whether applications or systems oriented, progressive DP professionals are finding Pascal to be a valuable tool.

Unique Features:

- The participants will get **actual hands-on experience** with the language via Ohio Scientific Micro-computer Systems. Participants will be assigned to groups and each group will have the use of a microsystem. Participants will design, write, compile, execute, test, and debug. **Each microsystem includes a printer allowing participants to retain a hard copy of their seminar efforts.**
- **Standard Pascal, rather than a special version of Pascal, will be taught.** This means that participants will be able to apply what they learn to virtually any Pascal programming environment.
- There will be several in-class programming exercises and all participants will receive copies of working solutions.

- This seminar is structured to provide the participants with more than just the mechanics of Pascal Programming. **Design and style will be emphasized** using a simple three step approach: fundamentals, intrinsic functions, and advanced features.
- In addition, participants will receive a comprehensive listing of suggested reading materials.

Who Should Attend:

Programmers (both applications and systems oriented), analysts, managers, and anyone with a genuine interest in the subject matter.

This seminar will be limited to a maximum of 30 participants.

Program:

Introduction

History
Advantages of Pascal
Uses of Pascal

Backus-Naur Form (BNF)

Simple Data Types

Boolean
Integer
Real
Char
Other Data Types

How to Write A Pascal Program

General Style Suggestions
Pascal Program Structure
Additional Considerations

Pascal Statement Structures

Operator Precedence
The Assignment Statement
The Compound Statement
Choice Statements
Iteration Statements

Structured Programming

Fundamentals
Stepwise Refinement and Pseudo-Code
Structured Walk-Throughs and Peer Code Reviews

Scalar and Subrange Types

Structured Data Types

Arrays
Records
Sets
Files

Pointer Types

Linked Allocation vs. Sequential Allocation
Linked Allocation in Pascal

Procedures and Functions

Procedures
The Concept of Scope
Function

Input and Output

The Read Procedure
The Write Procedure

Additional Topics

Comparisons of Pascal to Other Languages
Status of ANSI Standardization

Seminar Leader:

EDWARD V. BERARD is a consultant in business, scientific, social science and educational systems. His experience includes systems management, systems design and documentation, very large data bases, networking systems, code optimization, mathematical modeling, numerical analysis, benchmarking, graphics, and computer science education.

Dates and Locations:

Sept. 14-16, 1981 Atlanta

Marriott Downtown
404/659-6500

Oct. 14-16, 1981 Washington, D.C.

Holiday Inn-Bethesda
301/652-2000

Nov. 16-18, 1981 New York

New York Sheraton
212/484-3314

Dec. 14-16, 1981 Anaheim

Anaheim Marriott
714/750-0800

Jan. 25-27, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Feb. 17-19, 1982 San Francisco

Sheraton Palace
415/392-8600

Mar. 22-24, 1982 Atlanta

Dunfey
404/351-6100

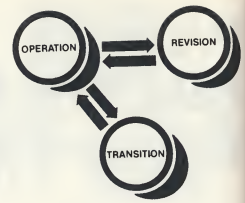
Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

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Purpose:

Quality Assurance is a program of planned and systematic activities to determine, achieve, and maintain computer software quality.

This seminar deals with the specifics of implementing a QA program. The specific skills imparted are:

- Identification, definition and qualification of software quality factors
- The procedures and functions of a QA organization
- The tools and techniques available
- Techniques for identifying the most costly errors and important quality factors in a given application
- The techniques for specifying quality factors in the "requirements and specifications" part of a contract
- The methods of developing a QA program in your organization

Special Features:

Part of the comprehensive handouts for this seminar will be specific QA policies and standards that are widely used in government and industry. These QA policy statements will be immediately applicable to the attendee in home organizations and lend substantial credibility to the organization's software development expertise.

McCabe and Associates are leading efforts to establish QA programs within major corporations to satisfy various government policies (such as Mil Spec 52779A). These efforts establish the QA organization, its QA programs, and its interface with development and testing groups. Lessons learned from these experiences will be presented in the seminar.

Attendees will also receive a pre-publication draft of the book, "A Survey of Industrial Software Quality Assurance."

Who Should Attend:

This seminar is directed at management and technical personnel involved in the specification, development, acquisition, or maintenance of applications or systems software. Also, personnel involved in developing company software policies and guidelines will greatly benefit.

Program:

Definitions

- What is software quality?
- How is quality controlled?
- What is quality assurance?

Software Quality Factors

- Factors in development, operation, modification, system evolution.
- Factors affecting the software life cycle.
- Criteria used in measuring the factors.

Software Quality Metrics

- The need for quantification.
- The metrics.

Procedures, Guidelines and Functions for Quality Assurance

- Project specific QA/software engineering guidelines.
- Example company policy for QA/software engineering requirements.
- QA functions in the software life cycle.
- Fitting quality controls to the project size.

QA Tools and Techniques

- Tool and technique taxonomy for the software life cycle.
- Techniques glossary — references.
- Tools glossary — references.

Audits and Reviews

- A hierarchy of QA standards for reviews.
- Developing a feed-forward software error profile in the development process.
- Quality control of the product and quality control of the review.
- Role playing, training, results.
- Functional and physical audits.

QA Policies and Standards

- (DOD) Mil Spec 52779A and the Navy 1679: An Analysis — strong and weak points; Implementing the mil spec in the contractor/government house.
- The IEEE QA standard.
- FAA QA requirements.
- Other QA applicable standards and policies.

Developing a QA Program

- Pareto error analysis — where to apply QA first.
- Specifying software quality "up front": Factor specification; Criteria specification; Quantification specifications.
- QA in contracts: Best contract option for QA; Contracting for the QA function.

Software Contracts

- An evaluation of five contract options.
- The most effective options for your system.
- Contracting the QA function.

Seminar Leaders:

This seminar has been developed for IAT by Thomas J. McCabe and Associates. Each seminar will be taught by a senior associate of McCabe and Associates.

Dates and Locations:

Sept. 9-11, 1981	New York New York Sheraton 212/484-3314
Sept. 30- Oct. 2, 1981	Minneapolis L'hotel Sofitel 612/835-1900
Oct. 21-23, 1981	San Francisco Jack Tar 415/776-8200
Nov. 18-20, 1981	Washington, D.C. Holiday Inn-Bethesda 301/652-2000
Dec. 15-17, 1981	Atlanta Marriott Downtown 404/659-6500
Jan. 13-15, 1982	Denver Marriott Southeast 303/758-7000
Feb. 24-26, 1982	Washington, DC Holiday Inn Bethesda 301/652-2000
Mar. 24-26, 1982	San Francisco Sheraton Palace 415/392-8600

Tuition:

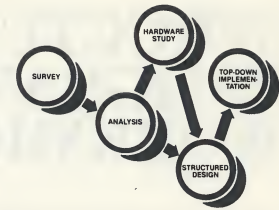
Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

STRUCTURED ANALYSIS AND DESIGN



Purpose:

This seminar is designed to give attendees an in-depth experience in using structured analysis and design techniques.

Structured analysis is a method of thoroughly understanding the user environment before attempting to design or build the automated system. This seminar provides methods to document all the user functions, data flows, organizational interactions, and data files in the user environment. The techniques present a vivid picture of the total application area that both allows analysis of the current operations and also identifies the most profitable areas for automation. Structured analysis provides the specific tools for such a thorough analysis of the user environment and results in clear and concise functional specifications and performance specifications of the automated system.

The seminar also covers the software design process, examining in detail the techniques of top down and structured design. Participants are given the opportunity to apply structured design techniques in solving practical problems, including real time system design. Critiques of these solutions emphasize design measures which examine system characteristics which, when improved, result in lowered life cycle maintenance costs.

Who Should Attend:

This seminar is designed for programmers, systems analysts and designers, and their managers.

Program:

Introduction

- The Software Development Process
- The Analysis and Design Stages: An Assessment of Current Techniques
- The Cost of Errors: With the Development Process and Later
- The Main Problems in the Analysis and Design Stages

Structured Analysis

- Building a Data Flow Diagram of the User's Organization
- Identifying High Level and Low Level User Functions
- Identifying Anomalous Organizational Functions
- Identifying the Total Impact of an Organization's Functions
- Building a Data Dictionary and Data Base
- Defining the Steps in User Functions
- The Appropriate Amount of Detail
- The Right Tools
- Narratives
- Structured English
- Structured Trees
- Decision Tables
- Identifying Which Functions Can Be Automated in the User Environment
- Cost/Benefit Analysis
- Identifying Risks
- Interactive Versus Batch
- Communicating the Results
- To Management
- To Users
- To Designers
- How to Evaluate the Results
- The Interface to Structured Design — Functional Specifications

Structured Design

- Considerations in the Design Process
- Modularity
- Maintainability
- Efficiency
- Others
- Top Down Design — The Technique
- Module Structure and Size
- Independence of Modules
- Hierarchy Charts
- Decision Hiding
- HIPO Diagrams
- Levels of Abstraction
- Stepwise Refinement
- Structured Design
- Structure Charts
- Composite Design Procedure
- Team Design Exercise 1
- Module Coupling and Cohesion
- Team Design Exercise 2
- Application to Existing Software
- Special Design Considerations

- Human Interface
- Critical Pieces
- Real Time Systems
- Design Testing and Validation
- Real World Experience
- Statistics on the Amount of Time and Number of Errors in the Design Process

Interfaces to Structured Programming

Seminar Leaders:

This seminar has been developed for IAT by Thomas J. McCabe and Associates. Each seminar will be taught by a senior associate of McCabe and Associates.

Dates and Locations:

Sept. 14-16, 1981 Denver

Denver Marriott
303/758-7000

Oct. 26-28, 1981 Washington, D.C.

Holiday Inn-Bethesda
301/652-2000

Nov. 18-20, 1981 San Francisco

Sheraton Palace
415/392-8600

Dec. 2-4, 1981

Houston
Marriott West Loop
713/960-0111

Dec. 9-11, 1981

New York
New York Sheraton
212/484-3314

Jan. 27-29, 1982

Washington, DC
Bethesda Marriott
301/897-9400

Feb. 10-12, 1982

San Francisco
Jack Tar
415/776-8200

Mar. 10-12, 1982

New York
NY Sheraton
212/484-3314

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

STRUCTURED PROGRAMMING WORKSHOP



Purpose:

Structured programming works! In a recent series of articles in Computerworld, **structured programming was credited with increasing overall programmer productivity, reducing time spent on maintenance, and enhancing the ability to meet deadlines.** These results were reported by real people working in real DP environments. Far from being a fad, structured programming has proven its usefulness, and the number of DP shops using structured programming is increasing.

Structured programming techniques have many additional benefits. They are language, machine, and applications independent, i.e., they can be used in any DP environment. Most structured programming techniques are so simple that they can be taught to entry-level programmers with positive, measurable results. Most importantly, structured programming techniques allow programmers to write good code — and know it!

This seminar has several important underlying philosophies including:

- Structured programming is a philosophy, not a religion. Specifically, you need not employ every structured programming technique “to the letter” in order to achieve benefits.
- Structured programming is not just an “advanced” programming technique, i.e., entry-level programmers, as well as their more experienced co-workers will benefit from attending this seminar.
- Management can also benefit from a knowledge of structured programming techniques. Those in management positions are strongly urged to attend, either alone or with their subordinates.

Unique Features:

- Participants will not only be shown structured programming techniques, but will also be shown when and where to use them.
- **Computer Assisted Instruction (CAI) utilizing a group of Ohio Scientific Microcomputer Systems will allow participants to study selected topics at their own speed.**

These systems will interact with the participants by describing selected topics and giving short quizzes.

- Management considerations will be an important part of the topics covered.
- Actual structured programming examples in several different programming languages will be supplied.
- Approximately half of the total seminar will be devoted to general, in-class exercises to give the participants a better feeling for the techniques covered.
- Numerous references on all levels will be supplied.

Who Should Attend:

Programmers, analysts, designers, managers, engineers, scientists, business professionals who are interested in consistently producing and maintaining quality software.

Program:

Motivation for Structured Programming

The Software Crisis
The Programming Needs Today and In The Future

Chronological Development of Structured Programming Proper Program Construction

Proper Programs
Prime Programs

Basic Structured Programming Constructs

Sequence
Iteration
Choice

The Seven Characteristics of Structured Code

Stepwise Refinement and Pseudo-Code

Module Specification
Structured English
Stepwise Refinement

Programming Style

Module Independence

Module Strength (Cohesion)
Module Coupling

Quality Control During Structured Programming

Peer Code Reviews
Code Inspections
Structured Walk-Throughs

Conversion of Unstructured Code to Structured Code

Ashcroft-Manna Technique
Duplication of Code
Boolean Flag Technique

Suitability of Common Programming Language for Structured Programming

Additional Aspects of Structured Programming

Maintainability
Adaptability
Efficiency
Productivity

Advanced Structured Programming Concepts

The Chief Programmer Team
Mathematical Proofs

Management Considerations

How to Implement Structured Programming in Your Shop
Objectives and Motivation of Structured Programming
How Structured Programming Relates to Other Structured Techniques
Pitfalls
Where to Get Help

Seminar Leader:

EDWARD V. BERARD is a consultant in business, scientific social science and education systems. His experience includes management, systems design and documentation, very large data bases, networking systems, code optimization, mathematical modeling, numerical analysis, benchmarking, graphics, and computer science education.

MICHAEL BRENTON is a project manager and senior system consultant with INCO, Inc. His experience includes the management and performance of analysis, design, development, test, and implementation of distributed and non-distributed data bases systems, networking systems and user support terminal systems.

Dates and Locations:

Oct. 26-30, 1981 San Francisco
Jack Tar
415/776-8200

Dec. 7-11, 1981 New York
Sheraton City Squire
212/581-3300

Feb. 8-12, 1982 Washington, DC
Twin Bridges Marriott
202/628-4200

Tuition:

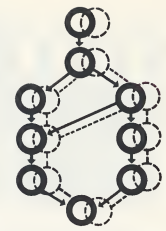
Through December 31, 1981:

\$750 per person if payment is received by IAT prior to start of seminar, or \$795 per person if IAT invoices after seminar.

Effective January 1, 1982

\$795 per person if payment is received by IAT prior to start of seminar, or \$845 per person if IAT invoices after seminar.

STRUCTURED TESTING



Purpose:

In most software systems the central problems are reliability and maintainability. Past experience indicates that we often spend 50% of our time in testing and more than 70% of our dollars in maintenance. On most projects, however, the testing and modularization practices are severely inadequate. **This seminar presents techniques and methods that consistently improve reliability and maintainability and which should be employed in any size software project.** The attendee will gain specific skills to:

- develop a complete test plan
- thoroughly test specifications, design and code
- test the effects of modifications
- define and enforce testing and maintenance standards

In-depth techniques will be presented that identify software complexity, limit software complexity during development, and test thoroughly against complexity. The emphasis will be on real live practical applications and the participants are encouraged to bring examples of operational software to be analyzed with the testing and modularization techniques.

Who Should Attend:

This seminar is intended for programmers, systems analysts and designers, project team members and their supervisors who work with system development or maintenance.

Program:

The Role and Importance of Testing

- During System Development
- On Existing Systems

The Test Plan

- When It's Defined
- Responsibilities, Documentation, Acceptance

Levels of Testing

- Testing Against Requirements
- Testing Against Specifications
- Functional Specs
- Performance Specs
- Testing the Design
- Testing the Software Modules

The Central Problem — Software Complexity

- Reliability Problems
- Maintainability Problems
- Development Problems

The Measurement and Quantification of Software Complexity

- Graph Theory Preliminaries
- Alternate Methods to Calculate Complexity
- Calculating Complexity in Terms of Language Constructs
- Controlling and Reducing Complexity

Structured Modularization

- Modularizing the Design by Complexity
- Modularizing the Code by Complexity

Verification and Validation

- Drivers
- Design Simulation and Validation
- Functional Testing
- Error Seeding
- Statistical Prediction
- Code Verification
- Test Data Base
- Project Survey

Structured Testing

- The Technique
- Testing Against Complexity
- Structural Reduction
- Structured Testing of:
 - The Specification
 - The Design
 - The Code

The Effectiveness and Reliability of Various Testing Environments

- Integration Testing Performed
 - Top Down
 - Bottom Up
- Structured Testing of:
 - Structured Code
 - Unstructured Code

Reliability

- The Critical Mass of Software Systems
- The RIPPLE Effect
 - What to Expect and How to Predict It
- An Analysis of Errors
 - Design Errors
 - Coding Errors
 - Main Causes of All Errors
 - Main Causes of Fatal Errors
 - Error Distribution in Small and Large Projects

Software Acquisition

- How to Insist on Proper Modularization
- How to Enforce Proper Integration and Testing
- Enforcing Structural Testing and the Proper Documentation

Software Maintenance

- Analyzing the Complexity and Reliability of Existing Software
- Should A Software Module Be Modified or Redone?
- Structured Testing of Modifications

Seminar Leaders:

The seminar has been developed for IAT by Thomas J. McCabe and Associates. Each seminar will be taught by a senior associate of McCabe and Associates.

Dates and Locations:

Aug. 31-Sept. 2, 1981	Washington, D.C. Holiday Inn-Bethesda 301/652-2000
Oct. 5-7, 1981	Phoenix Ramada Townhouse 602/279-9811
Oct. 14-16, 1981	Houston Marriott West Loop 713/960-0111
Nov. 4-6, 1981	New York New York Sheraton 212/484-3314
Dec. 2-4, 1981	Washington, D.C. Holiday Inn-Bethesda 301/652-2000
Jan. 20-22, 1982	San Francisco Jack Tar 415/776-8200
Feb. 3-5, 1982	Atlanta Marriott Downtown 404/659-6500
Mar. 3-5, 1982	Washington, DC Holiday Inn Bethesda 301/652-2000

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

SYSTEMS ANALYSIS AND DESIGN WORKSHOP



Purpose:

This course is designed to provide participants with a thorough understanding of the principles and techniques of systems analysis and design, and how to apply them.

The mixed format of discussion and workshop exercises allows participants to explore all aspects of the subject and to gain reinforcement through actual hands-on experience. At the conclusion of the workshop each participant will have demonstrated their ability to analyze data and procedures and prepare structural models, data flow diagrams, data specifications, system performance models, and program logic specifications.

Who Should Attend:

Improved personal productivity can be achieved by any member of the EDP/User team who experiences this proven program. Systems analysts will have an opportunity to formalize the skills they already use and to acquire new ones. Programmers and managers will gain a firmer understanding of a process in which they directly participate. Users and others who must interact with systems groups will enjoy the workshop's practical approach which demands no prerequisite technical training.

Program:

The Skills Demanded of Analysts and Designers

- Responsibilities for technical knowledge and performance
- The human side of analysis and design
- What organizations expect from systems people
- The varied roles of an analyst
- Productivity in systems work

Systems Analysis and Design Planning

- Organization of systems work
- Phases in the project life cycle
- Preparing work breakdown plans
- Flow planning networks
- Estimating systems projects
- The value of precision
- Predicting the future using knowledge of the past
- The roles users play in systems planning and development
- The need for user participation
- Securing strong user commitments at the outset

Feasibility and Cost Benefits Analysis

- Assuring the accuracy of a study
- Systems research study methods
- Determining the extent of research
- Development of the total cost picture
- Analyzing non-financial system impacts
- Determination of what is and is not a benefit
- System benefits measurement
- Sample feasibility study data

Functional Specifications

- The definition, purpose, and scope of a functional specification
- What a functional specification should and should not contain
- Style guide for specification writing
- The multiple uses of a functional specification
- Preparing complete data definitions
- Organization of a data dictionary
- Data flow diagrams and their uses
- Data flow diagramming options and standards
- Structural analysis of information systems
- Development of structural models
- System design and development methodologies: a comparative analysis
- Securing user approval for functional specifications

Design Specifications

- The definition, purpose, and scope of a design specification
- Design specification contents
- Design documentation techniques and standards
- Structure charts and functional decompositions
- Decision tables
- The HIPO method
- Representation of logic details: N-S diagrams; structured flowcharts; pseudocode
- Design of outputs, forms, and displays
- File design
- Record layouts for retained data
- Estimating file sizes
- Securing user approvals for design specifications
- Proposing alternative system models

Design Validation

- Techniques for ongoing evaluation of design
- Design review
- Structured walkthroughs
- A hierarchy of systems test techniques
- Preparing test data
- Design of test procedures

Installation and Post-Installation

- Development of user training documents

- Conducting user training programs
- System conversion
- Data conversion

Workshop Leader:

This workshop has been developed for IAT by International Management Services, Inc. (IMS). Each workshop will be taught by a senior staff consultant with IM.

Dates and Locations:

Sept. 21-25, 1981 San Francisco

Sir Francis Drake
415/392-7755

Oct. 19-23, 1981 Minneapolis

Rodeway Inn
612/854-3400

Oct. 26-30, 1981 Washington, D.C.

Key Bridge Marriott
703/524-6400

Nov. 16-20, 1981 Chicago

Holiday Inn-Chicago City Centre
312/787-6100

Nov. 30-

Dec. 4, 1981

New York
New York Sheraton
212/484-3314

Dec. 14-18, 1981 Houston

Ramada Inn-Greenway Plaza
713/528-6161

Jan. 25-29, 1982 Washington, DC

Twin Bridges Marriott
202/628-4200

Feb. 8-12, 1982 San Francisco

Sheraton Palace
415/392-8600

Mar. 8-12, 1982 Atlanta

Marriott Downtown
404/659-6500

Tuition:

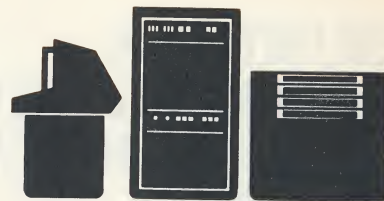
Through December 31, 1981:

\$750 per person if payment is received by IAT prior to start of seminar, or \$795 per person if IAT invoices after seminar.

Effective January 1, 1982

\$795 per person if payment is received by IAT prior to start of seminar, or \$845 per person if IAT invoices after seminar.

THE SUCCESSFUL APPLICATION OF MINICOMPUTER SYSTEMS



Purpose:

Minicomputers and microcomputers are highly successful, cost effective and practical solutions to a broad range of commercial and industrial automation problems. They provide INFLATION FIGHTING TOOLS with their potential for improving PRODUCTIVITY and REDUCING OPERATIONAL COSTS. Tools which can be used to equal advantage by small business concerns or large multi-national corporations. The minicomputer also forms the cornerstone of the distributed computing concept.

This seminar cuts through the mystique which has grown up around minicomputers and presents factual information on systems, technology vendors and applications. A clear set of guidelines is presented which simplifies the selection, evaluation, design, development, installation and operation of minisystems.

Who Should Attend:

Computer professionals, analysts and programmers, as well as long-range planners, productivity specialists, automation designers and information system users. All technical and conceptual areas are fully explained and any individual who has a common sense understanding of computers can actively participate and benefit.

Program:

The Small Computer World

- Maxi-, Mini- and Microcomputers
- Positive Attributes of Minicomputers
- Minisystems limitations
- Vendors positions and market forces

Minicomputer Systems and Components

- Central Processor Characteristics
- Micro-, Mini- and Super Mini
- Small System Memory Technology
- Secondary Storage Methodologies
 - Floppy and Winchester Disks
 - Bubble Memory
 - Cassette and Cartridge Tapes
- Variety of Peripheral Support
 - Graphics, Voice, Bar Codes, Mag Stripes, OCR, etc.
- Dumb, Smart and Intelligent Terminals

- System Operating Systems, Utilities and Data Base
- Programming Languages
 - Traditional Alternatives
 - BASIC, PASCAL, ADA, etc.
- Application Package Explosion

Successful Minicomputer Applications

- Data Entry/Collection
- Business Systems and Data Processing
- Data Communications
- Time Sharing
- Industrial Automation

Definition, Alternatives Analysis and Equipment Selection

- Defining Systems Requirements
- Consideration of Processing Alternatives
- Is a Minicomputer the "Correct Tool"?
- System Sizing
- Application Software Sources
- Minisystem Selection Methodology
- Dealing with Vendors
- Requests for Proposal
- Evaluation Criteria
- Successful Computer System Negotiation
- Multi-Vendor Contracts

Minicomputer Systems Design and Development

- Introduction to Design Practices
- Critical Areas in Minisystems Design
- Data Flow and Storage
- Human Engineering Considerations
- Special Application Considerations
 - Commercial Systems
 - Telecommunications
 - Process Control Applications
- Common Design Pitfalls
- Minicomputer Projects
 - Management Concerns
 - Technical Requirements
- User Supremacy

Installing and Operating a Minisystem

- Site Preparation
- Installation Checklists
- Operator and User Training
- Security Issues
- Maintenance Methods and Contracts
- System Life Prediction
- Operational Costs
- Success Oriented Management

Distributed Processing Concepts

- Why Distribute
- Computer Interconnection
 - Methodologies
- Network Structures and Coastal Approaches SNA, Decnet, Ethernet, ARC, etc.
- Value Added Networks
 - Telenet, Tymnet, ACS, XTEM, SBS

- Distributed Systems Examples
- Data Control and Data Base Considerations
- Future of Distributed Systems

Trends and Positions in Minicomputers

Seminar Leaders:

This seminar has been developed for IAT by International Management Services, Inc., (IMS). Each seminar will be taught by a senior staff consultant with IMS.

Dates and Locations:

Sept. 14-16, 1981 Phoenix

Ramada Townhouse
602/279-9811

Oct. 28-30, 1981 New York

New York Sheraton
212/484-3314

Nov. 16-18, 1981 Washington, D.C.

Key Bridge Marriott
703/524-6400

Nov. 30-

Dec. 2, 1981

Boston
Boston Marriott
617/969-1000

Jan. 18-20, 1982 Atlanta

Colony Square
404/892-6000

Feb. 1-3, 1982

Washington, DC
Holiday Inn Bethesda
301/652-2000

Mar. 1-3, 1982

Los Angeles
Amfac at LA Int'l
Airport
213/670-8111

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by IAT prior to start of seminar, or \$595 per person if IAT invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by IAT prior to start of seminar, or \$645 per person if IAT invoices after seminar.

BUSINESS WRITING SKILLS FOR SECRETARIES



Purpose:

This is an intensive two day seminar for the secretary who must write effectively. Participants will assess their current skill levels, learn specific business writing skills, formats and techniques as well as 'brush up' on the basics of punctuation, grammar, and business English. In addition, the seminar will include an intensive business writing workshop. **The secretary who attends will increase knowledge and proficiency in writing business letters, reports, independent correspondence, minutes, procedures and other communications.**

Program:

Assessing Your Business Writing Skills

- Current Strengths and Weaknesses
- Reviewing Your Current Business Writing Profile
- Expanding Your Skills for Present and Future Responsibilities

Writing Effective Business Letters

- Different Letters for Different Purposes
- What All Good Letters Have in Common
- What to Avoid in Letter Writing
- Business Letter Formats
- Writing Practice Letters

Grammar, Punctuation and Construction

- A quick way to learn punctuation
- Exercises in Sentence Construction, Paragraph Construction and Unified Writing
- Application of Grammatical Rules to Business English
- Getting from Information to Outline to Topic Outline to Finished Copy
- The 3 C's of Effective Writing

Improving General Writing Skills

- Gaining Attention
- Organization of Content
- Checking for Coherence, Clarity and Impact
- Effective Summarizing
- Minimizing Interpretation by the Reader

Business Writing Workshop

- An Intensive Hands-On Exercise in Writing Reports, Memoranda, Minutes and Procedures

Report Writing

- Researching, Organizing and Planning Reports
- How to Conduct Independent Research
- The Editing Process in Report Writing

Composing Effective Independent Correspondence

- Know what to write and when
- Streamlining Information Flow
- Writing for Maximum Effect
- Drill and Practice Exercise in Composing Independent Correspondence

Business English for Secretaries

- The Twelve Most Common Secretarial Errors
- Business English Made Easy
- Guidelines for the Effective Use of Business English

Seminar Leader:

JOHN LA ROSA is a faculty instructor for Training By Design, Inc., a New York City based management development and training organization. Their clients include the Philadelphia Electric Company, Control Data Corporation, Johnson's Wax, Cessna Aircraft and numerous other Fortune 500 organizations. Mr. La Rosa has conducted classes in the secretarial sciences at the renowned Katherine Gibbs School in New York City. He is Training By Design's primary instructor in Business Writing Skills for Secretaries.

Dates and Locations:

- Sept. 14-15, 1981 San Francisco**
Holiday Inn-Union Square
415/398-8900
- Sept. 17-18, 1981 Washington, D.C.**
Tyson's Corner Marriott
703/734-3200
- Oct. 5-6, 1981 Houston**
Stouffer's Greenway Plaza
713/629-1200

- Nov. 9-10, 1981 Minneapolis/St. Paul Area**
Radisson St. Paul
612/292-1900
- Dec. 7-8, 1981 New York**
New York Sheraton
212/484-3314
- Jan. 11-12, 1982 Houston**
Stouffer's Greenway Plaza
713/629-1200
- Jan. 14-15, 1982 San Francisco**
Jack Tar
415/776-8200
- Jan. 21-22, 1982 Washington, DC**
Twin Bridges Marriott
202/628-4200
- Feb. 8-9, 1982 New York**
NY Sheraton
212/484-3314
- Feb. 11-12, 1982 Minneapolis**
Rodeway Inn
612/854-3400

Tuition:

Through December 31, 1981:

\$410 per person if payment is received by CDMI prior to start of seminar, or \$455 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$435 per person if payment is received by CDMI prior to start of seminar, or \$485 per person if CDMI invoices after seminar.

EFFECTIVE PRODUCT MANAGEMENT FOR NON-CONSUMER PRODUCTS



Purpose:

The methods for marketing non-consumer products are changing! Many companies are exploring the practices of the most sophisticated consumer marketing organizations and are applying the concept of product management. The results have been very successful!

The Product Manager system has become a widely acclaimed marketing-oriented management system. Both new product development and ongoing product profitability have benefited.

Effective Product Management for Non-Consumer Products is your opportunity to discover how the Product Manager system will improve your company's profitability.

Who Should Attend:

Product Managers, R&D Managers, Production Managers, Sales Personnel, Marketing Professionals, Program Managers, and others who function in, or wish to establish a product management system.

Key Benefits for You and Your Organization:

- Develop more successful new product introductions
- Initiate better competitive strategies and tactics
- Improve awareness of market trends
- Develop superior forecasting techniques for better profit planning
- Improve team member contributions to product planning
- Increase visibility and control of company products and markets.
- Control growth of sales and profits in both boom and bust times.
- Better matching of company goals to company resources.

Program:

- The importance of Marketing to Effective Product Management
- The History of Product Management
- The Product Management Organization
- Personal Skills needed for Effective Product Management
- The Product Manager's Environment
- Developing Communication and Coordination Skills
- Organizational Relationships and the Product Manager System
- Developing Realistic Forecasts
- New Products and Product Management
- Planning — The Key to Effective Product Management
- Product Management and Project Management
- The Product Manager Interface with the Critical Functions of the Company: Manufacturing, Engineering, Marketing, R&D, Sales, etc.
- Preparing for the Product Plan
- Doing more Effective Product Plans
- Implementing the Product Plan
- Selling the Product Plan within the company
- Competing for Scarce Resources within the company

Seminar Leader:

CHARLES H. McFALL, MBA, has extensive experience as an executive and manager in marketing and product management.

Mr. McFall began his career in product management marketing with General Mills, Inc. in their grocery Products Division. After leaving General Mills in 1972, he held positions as Director of Marketing and Vice President of Marketing and Sales for two medium-size industrial products companies. In addition, he owned and served as president of an educational toy company, selling primarily to industrial and commercial accounts.

Mr. McFall is presently president of his own marketing and management consulting firm. He teaches graduate level marketing courses and conducts various seminars across the United States.

Dates and Locations:

Sept. 10-11, 1981 San Francisco

Holiday Inn-Union Square
415/398-8900

Oct. 22-23, 1981 Minneapolis

Radisson St. Paul
612/292-1900

Nov. 19-20, 1981 Washington, D.C.

Rosslyn Westpark
703/527-4814

Dec. 10-11, 1981 Houston

Houston Marriott
Brookhollow
713/688-0100

Jan. 19-20, 1982 Minneapolis

Rodeway Inn
612/854-3400

Tuition:

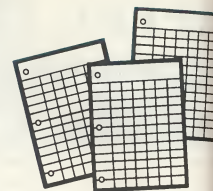
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FINANCE AND ACCOUNTING FOR NON-FINANCIAL PERSONNEL: THE NEW GRAPHIC APPROACH



The Need:

While computers are increasing the volumes of financial reports available to managers, management use of financial reports remains extremely low. Managers need a better way to . . .

- understand what the numbers mean
- learn how to use the numbers for decisions
- obtain clear and concise summaries from the volumes of numbers

The Solution:

This seminar will provide you with graphic tools for turning financial data into extremely clear and concise pictures of a business' past progress, present status and future financial possibilities.

Specifically:

1. A graphic Financial Picture of a business —
The Financial Picture clarifies what all the reports and numbers say about the progress and status of a business
2. A family of Financial What-If Graphs for the future of a business —
The Financial What-If Graphs clarify a business' future possibilities in profit, cash, and return on investment, and show how big decisions and achievements will affect these future financial results.

These graphic approaches represent a very fundamental and major step forward in turning financial reports and numbers into clear and concise working documents that managers can and will understand and use.

Who Should Attend:

Managers, Supervisors, Administrators, Program Managers, Project Leaders, Consultants, Coordinators, Sales Personnel and others.

Key Benefits for You and Your Organization:

You can apply what you learn at this seminar in two ways

1. Improve your own management capabilities by learning what the reports and numbers mean and how to use them for decisions
2. Improve your financial reports by learning to present financial reports and analysis clearly enough that other managers will understand and use them

Seminar Outline:

The Financial Picture

- Seeing the financial picture from the reports
- Explaining accounting numbers
- Explaining financial reports
- Figuring out cash flows
- Predicting future reports and cash flows
- Sketching a customized financial picture of a business

Financial What-If Graphs

- How to graph future financial possibilities in terms of how key decisions will affect them
- Graphs to foresee and improve future profit
 - Breakeven graphs
 - Profit sensitivity graphs
 - Tailored profit graphs
- Graphs to foresee and manage future cash
 - Return On Investment
 - ROI sensitivity graphs
 - Tailored ROI graphs

Seminar Leader:

W. R. PURCELL, JR., is a nationally known educator in the field of financial analysis. Mr. Purcell is the originator of the graphic system of finance and accounting upon which this seminar is based. Prior to forming his own financial education business, Mr. Purcell held management and planning positions with Westinghouse, Industrial Nucleonics, and Battelle Memorial Institute.

Dates and Locations:

Sept. 23-25, 1981 Minneapolis

L'hotel Sofitel
612/835-1900

Oct. 21-23, 1981 Washington, DC

Holiday Inn-Bethesda
301/652-2000

Nov. 16-18, 1981 Minneapolis

Rodeway Inn
612/854-3400

Dec. 14-16, 1981 San Francisco

Sheraton Palace
415/392-8600

Jan. 25-27, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Feb. 17-19, 1982 Houston

Stouffer's Greenway
Plaza
713/629-1200

Mar. 29-31, 1982 Minneapolis

Rodeway Inn
612/854-3400

Tuition:

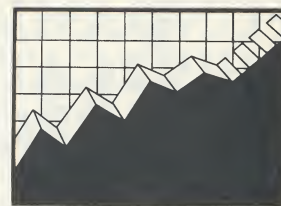
Through December 31, 1981:

\$570 per person if payment is received by CDMI prior to start of seminar, or \$615 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

FORECASTING TECHNIQUES FOR DECISION MAKING



Purpose:

Led by Robert McLaughlin, one of the country's leading business economists, this seminar will survey the state-of-the-art in forecasting. It will avoid the theoretical and focus on tools you can use in real business practice. All techniques used in forecasting will be covered. Special attention will be given to the unique methods developed and published by the instructor himself.

Who Should Attend:

The seminar is intended for all who actually use or who participate in forecasts, including managers, marketing researchers, sales forecasters, statisticians, system analysts, production schedulers, operations researchers, economists and planners.

Although the newest techniques are included, the seminar minimizes mathematics. No special background is required of those who attend. The seminar leader, widely noted for presenting difficult concepts simply will accent use rather than theory.

Unique Features:

The seminar includes a special manual, *Forecasting Techniques for Decision Making*, that is available only to those who attend the seminar.

The final afternoon of the seminar is a special economic analysis of current business conditions.

Program:

Forecasting For Decision Making: Crucial Role for the Manager. Most Important Document? Decision Maker Consensus. Organizing for Forecasting. Production Versus Market Demand. Relating to the National Business Cycle.

Time Series Analysis: Census Method II (X-11 Program). Naive Models. Moving Averages. Exponential Smoothing. Box-Jenkins Models. Makridakis and Wheelwright. ARIMA Models. Adaptive Models. State Space Forecasting.

Short-Term Forecasting: The Long-Term Trend. The Business Cycle. The Seasonal Pattern. Irregular Gyrations. Workdays and Trading Days. Rate of Change: The Hidden Cycle. Pressure Indexes: Interaction. Paired Indexes as Leading Indicators. Developing Leading Indicators. FORAN I. FORAN II.

Econometric Modeling: Forecasting Next Year's Budget. Forecast: Plan or Contract? Econometrics Made Easy. The Quarterly Econometric Model. Building the Model of the Company. A Model of the Income Statement. Divisional Models and Product Lines. The "What If" Model. The Regression Equation. Testing the Equation. Testing the Coefficients. Forecasting Politics.

Long-Term Capacity Forecasts: Forecasting New Products. Forecasting Growth Products: Saturation Analysis; the Ultimate Potential; the "S" Curve; the Product Life Cycles; the Replacement Market. Forecasting Mature Product Lines: the Full Capacity Case; Capacity Utilization; Logarithmic Trends; Choice of Span; Length of Space; Why Semi-log Scales; the Penetration Problems; Long-Term Econometrics.

A Primer of The Newer Tools: The Time-Shared Computer. Micrometrics. Input-Output Models. Forecasting by Probabilities. Growth Rates and Growth Triangles. Error Analysis and Batting Averages.

An Analysis of Business Conditions: Business Conditions Digest. Survey of Current Business. The Econometric Model Services. Indicator Pyramids. Pairing: Leaders and Coinciders. Monetary-Fiscal Policy Indicators. The Economic Pentad. The Management Triad. Diffusion Indexes.

Seminar Leader:

ROBERT L. McLAUGHLIN is President of Micrometrics, Inc. He was Marketing Research Manager for General Electric's Electronic Communications Department before joining Scovill Manufacturing Company's Metals Division, where he later became Director of Corporate Commercial Research. He recently won the coveted Abramson Award of the National Association of Business Economists for his article "A New Five-Phase Economic Forecasting System."

Dates and Locations:

- Sept. 21-23, 1981 Washington, D.C.**
Twin Bridges Marriott
202/628-4200
- Oct. 7-9 1981 Chicago**
O'Hare/Kennedy Holiday Inn
312/671-6350
- Oct. 14-16, 1981 Minneapolis**
Rodeway Inn
612/854-3400
- Nov. 4-6, 1981 New York**
New York Sheraton
212/484-3314
- Dec. 2-4, 1981 Washington, D.C.**
Twin Bridges Marriott
202/628-4200
- Dec. 16-18, 1981 Orlando**
Orlando Marriott Inn
305/351-2420
- Jan. 20-22, 1982 San Francisco**
Sheraton Palace
415/392-8600
- Feb. 9-11, 1982 Atlanta**
Colony Square
404/892-6000
- Mar. 10-12, 1982 Washington, DC**
Holiday Inn Old Town
Alexandria
703/549-6080

Tuition:

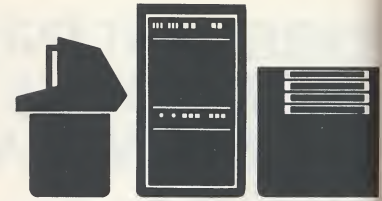
Through December 31, 1981:

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Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

FUNDAMENTALS AND APPLICATIONS OF DATA PROCESSING



Purpose:

Computers and computer systems have become virtual necessities in businesses and organizations of all sizes. The applications of data processing have become so pervasive that it is becoming vital for professionals in business, industry, government and the academic community to possess an appreciation and understanding of DP's present capabilities and future potential.

Fundamentals and Applications of Data Processing is designed for the professional who wants to learn about computers and how they can be used effectively.

Special Features:

A unique feature of this seminar is the incorporation of Control Data® PLATO® assisted learning, in which each participant receives hands-on experience on a computer terminal tied into the nationwide Control Data network.

Videotapes are also used, not only to provide variety to the learning experience but also to facilitate presentation of subjects best presented via animations, demonstrations, or video graphics.

Program:

- Components of Data Processing: Hardware, Software, Data, Data Base
- Introduction to the PLATO Terminal
- Hands-on Laboratory Activity
- Evolution of Hardware and Software
- Fundamental Parts of the Computer
- Hardware Organization: CPU, ALU, Registers, Channels, Peripherals
- Introduction to Computer Peripherals
- Computer Languages
- Computer Software Components: System, Operating System, Data Base Management System, Compilers, Applications Programs
- Computer Systems Configurations: Distributed Data Processing
- Telecommunications and the office of the future
- Information System Design
- Organizing for Automations: Need, Feasibility, Design, Install, Maintain
- Data Entry
- Developing Applications Programs
- Data Processing Department: Organization and Services
- The Data Base Environment
- Selecting Small Computers for Home and Business

Seminar Leader:

DR. THOMAS E. PERKINS has over three years' teaching experience at Southern Methodist University on computer science and business-related subjects. He has been associated with Electronic Data Systems and Informatics, and has consulted at Westinghouse Learning Corporation.

Dates and Locations:

- Dec. 2-4, 1981 Washington, DC**
Control Data Learning Center
2101 L Street, N.W.,
Suite 201
202/789-6430
- Dec. 9-11, 1981 Minneapolis**
Control Data Business Center
6809 York Avenue South
612/925-3310

Jan. 27-29, 1982 Atlanta
Southern Conference Center/Colony Square Hotel
404/892-6000

Feb. 24-26, 1982 San Francisco
Marriott Inn/Berkeley Marina
415/548-7920

March 24-26, 1982 Washington, DC
Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:

\$570 per person if payment is received by CDMI prior to start of seminar, or \$615 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

MAKING EFFECTIVE ORAL PRESENTATIONS



Purpose:

This is an intensive, results-oriented workshop that is designed to help make your oral presentations more interesting, powerful and effective.

Making Effective Oral Presentations will introduce you to the latest audiovisual devices, media uses and presentation techniques.

The workshop includes 'how-to-do-it' step-by-step instruction, confidence-building exercises, team and individual practice presentations and personal help in improving your delivery before large and small groups.

You will receive immediate feedback on your effectiveness. Through the use of instant-replay video recording and group discussion, you will quickly discover what works best for you and what areas can be strengthened. These critiques are kept positive and constructive for maximum learning.

Who Should Attend:

Any person who needs to be more competent in informing or persuading others through oral presentations. This includes:

Managers, Supervisors and Administrators

How you can make your briefing get the results you need while you demonstrate your own effectiveness to others.

Instructors and Trainers

How you can make your teaching more lively exciting and powerful.

Salespeople

How you can make your sales presentation sell better.

Public Relations Specialists, Fund Raisers, Community and Organization Leaders

How you can promote your project and get results.

Program:

Confidence Building

You will be introduced to some ideas, easy-to-do exercises and short talks that can improve your ability to think on your feet and to react with poise to various situations.

Presentation Preparation

You will be shown an easy way to organize and develop your presentation in the least possible time.

Survey of Aids

You will be introduced to the various ways that your presentation can be enhanced by the use of complementary aids. You will be shown how to effectively use them and what pitfalls to avoid. You will also practice preparing them and using them yourself.

Team Presentations

You will work with a small team in preparing and delivering a short presentation. These will be videotaped and discussed for your feedback.

Individual Presentations

You will work with the instructor in preparing your own presentation that will be delivered to the group. Again video recordings will be made. Emphasis will be placed on helping your preparation, natural delivery and poise. Help concerning your unique presentation problem will also be offered.

Seminar Leader:

DAVID HAAPALA is the President of Applied Education Corporation, a training and consulting firm in the areas of communications, human relations and personal development. He has worked for over eight years as a consultant and instructor for an internationally-recognized training organization. His students have included managers, salespeople and administrators of leading corporations, government agencies and other institutions. In addition, Mr. Haapala is a captain, pilot instructor and check airman for Northwest Orient Airlines. Mr. Haapala has had years of platform speaking and presentation experience. He has published a number of articles on communication and self-development and is a co-author of the book, "Professionals At Their Best."

Dates and Locations:

Sept. 21-23, 1981 Washington, DC

Tyson's Corner Marriott
703/734-3200

Oct. 13-15, 1981 Washington, DC

Twin Bridges Marriott
202/628-4200

Nov. 2-4, 1981 Minneapolis

Minneapolis Hilton Inn
612/331-1900

Dec. 1-3, 1981 San Francisco

Holiday Inn-Union Square
415/398-8900

Jan. 27-29, 1982 Washington, DC

Holiday Inn Bethesda
301/652-2000

Feb. 1-3, 1982 Houston

Hyatt Regency
713/654-1234

Mar. 1-3, 1982 San Francisco

Jack Tar
415/776-8200

Mar. 31-Apr. 2, 1982

Washington, DC
Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:

\$570 per person if payment is received by CDMI prior to start of seminar, or \$615 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

MANAGEMENT SKILLS FOR THE EXECUTIVE WOMAN



Purpose:

As a woman wishing to advance through the corporate ranks you must overcome obstacles unlike those confronting your male counterparts. The obvious issues of discrimination and harassment are decided through the legal process. The big obstacle that remains is your management style — how a woman manager interacts with and is perceived by subordinates, peers and supervisors can be as important in her career path as achievements.

Management Skills for the Executive Woman is a specialized examination of the management process from the point of view of the corporate woman. Special attention will be given the three important managerial skills: **integrating, adapting and activating.** Special focus will be given to case studies of successful women in management.

Your attendance will provide you with the opportunity to share experiences, problems and solutions with fellow women managers.

Program:

The New and Emerging Management Woman

- Women and Work; the Issues and Concerns
- Three important skills for the management woman — integrating, adapting and activating
- Successful women in management — case studies and analysis
- Identifying and utilizing organizational mentors

Managerial Skills for the Management Woman

- The five functions of management
- Managerial planning, organizing and controlling
- Managerial styles — options and alternatives
- Motivation — Building individual strategies and group climate
- Organizational structures — how they help and when they hinder

Improving Interpersonal Communication

- Overcoming the eighteen barriers to successful communication
- Developing the skills of effective self-expression
- Techniques for building trust and respect in the communication process
- Communication assessment profile
- How to plan and prepare a communication
- Techniques for creating a balanced communication

The Woman As A Leader

- Overcoming traditional roles and stereotypes
- Traditional and non-traditional leadership models
- Sources of influence, authority and power
- Leadership assessment profile
- The leadership continuum and its application to the direction of human effort

Time Management: The Skills and Techniques

- Overcoming time management terror
- Use of time — pay off, investment, organization, balance
- Determining what is important, essential, critical
- Establishing personal and professional priorities
- The concept of prime time
- Creating your own time management plan

Managing Conflict and Stress

- How to give 'bad news' to other people
- Workshop and case study analysis in managing interpersonal conflict
- Utilizing adaptive behavior to reach 'blocked' goals

Career and Life Strategies for Women

- Assessing strengths and weaknesses
- Developing career and life goals
- Creating a personal and life development plan

Seminar Leaders:

ROSALIND GOLD is a faculty instructor for Training By Design, Inc., a New York City based management development and training organization. Their clients include Cessna Aircraft, the Philadelphia Electric Company, the City of Wichita, Rockefeller Center, Inc., and numerous other organizations. Miss Gold is the author of 'The Essentials of

Management Practice,' 'Total Time Management' and 'Managerial Planning, Organizing, and Controlling.' She has consulted to Equitable Life Insurance, McGraw Hill and conducts extensive research in the area of time management.

JOYCE WILDING is also a faculty instructor for Training By Design, Inc. She collaborated on the design of 'Management Skills for the Executive Woman' and she is also the author of 'Women and Jobs: Issues and Concerns' and 'Career and Life Strategies for Women.'

Dates and Locations:

Oct. 5-6, 1981	New York Biltmore 212/661-1717
Oct. 8-9, 1981	Minneapolis Rodeway Inn 612/854-3400
Oct. 26-27, 1981	Houston Ramada Inn Greenway Plaza 713/528-6161
Nov. 9-10, 1981	Washington, D.C. Holiday Inn-Bethesda 301/652-2000
Nov. 16-17, 1981	San Francisco Sir Francis Drake 415/392-7755
Dec. 7-8, 1981	Minneapolis Rodeway Inn 612/854-3400
Jan. 18-19, 1982	Washington, DC Holiday Inn Old Town Alexandria 703/549-6080
Feb. 8-9, 1982	Houston Hyatt Regency 713/654-1234
Mar. 8-9, 1982	San Francisco Jack Tar 415/776-8200

Tuition:

Through December 31, 1981:

\$410 per person if payment is received by CDMI prior to start of seminar, or \$455 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$435 per person if payment is received by CDMI prior to start of seminar, or \$485 per person if CDMI invoices after seminar.

MANAGERIAL SUCCESS



Purpose:

Successful management is part art, part science. While there can be no substitute for actual experience, training can go a long way in preparing an individual for the unique challenges of management.

Managerial Success is an intensive three day seminar presenting practical direction for the managing of people, time, and organizational resources. A significant portion of this program is devoted to the analysis of your present effectiveness levels as a manager and in developing strategies for future growth and development.

Program:

Assessing your managerial effectiveness

- Self-analysis and group discussions of life and career satisfaction, job rewards, benefits and concerns.
- Assessment of managers' 7 major effectiveness areas.
- Differentiating between efficiency and effectiveness.
- Key steps for improving future effectiveness.

Managerial Communication

- The 6 component sender/receiver models
 - Overcoming organizational communicative barriers.
 - Active listening skills.
 - Utilizing descriptive feedback to improve performance.
 - Improving managerial self-expression.
 - Self-dramatizing.
 - Planning communicative messages.

Time Management and Delegation Skills

- 9 Guidelines for improving time management.
- Scrutinizing time management strategies.
- Time management's relationship to decision making.
- BAI — A concept for overcoming procrastination.
- Delegation — when to, what to, how to.
- Avoiding delegation pitfalls.

Managing the Exceptional Performer

- Benefits and rewards.
- Establishing performance criteria.
- Constructing the performance appraisal.
- Behavioral tools for maximizing performance.
- Training and development strategies.

Leading and Managing Better Meetings

- Leader roles and process.
- Facilitation skills.
- How to run shorter and more effective meetings.
- Analyzing the effectiveness of meetings.

Leadership for the 1980's

- Leadership as a different and broader concept than management.
- 7 Competencies for the manager who leads.
- Assessing your leadership profile.
- Managing concept and creativity.
- Motivation and change — the two products of leadership.

Stress Management

Analyzing the stress points in the manager's life and career.

- The 9 major causes of stress.
- Fight, flight, denial, or reconstruction — the responses to stress.
- Managing stress in others.

Seminar Leaders:

JIM VAN LARE is the President of Training By Design, Inc., a New York City based management development and training organization. Mr. Van Lare is the author of numerous training programs including 'Leadership and Motivation: The Influence Process,' 'Improving Communication Skills,' 'The Secretary as Manager,' and 'Improving Managerial Effectiveness.' He has consulted with major organizations in North America, South America and the Middle East. Prior to founding Training By Design, he was Vice President of In-House Training and Development for the American Management Associations.

ROBERT MALONY is a faculty instructor for Training By Design, Inc., a New York City based management development and training organization. Mr. Malony has tailored in-company training programs for IBM, Columbus and Southern Ohio Electric, the Bermuda Labor Council and McGraw Hill

Publishing. Prior to entering consulting, Mr. Malony was Training Manager for the New York Times where he created and conducted management development programs and introduced a total performance review system.

Dates and Locations:

Sept. 14-16, 1981 Washington, DC

Tyson's Corner Marriott
703/734-3200

Oct. 12-14, 1981 Minneapolis

Minneapolis Hilton Inn
612/331-1900

Nov. 16-18, 1981 San Francisco

Amfac Hotel, S.F. Int'l
Airport
415/347-5444

Dec. 14-16, 1981 Washington, DC

Twin Bridges Marriott
202/628-4200

Jan. 13-15, 1982 Houston

Stouffer's Greenway
Plaza
713/629-1200

Jan. 18-20, 1982 Minneapolis

Rodeway Inn
612/854-3400

Feb. 3-5, 1982

New York
NY Sheraton
212/484-3314

Mar. 8-10, 1982 Washington, DC

Holiday Inn Old Town
Alexandria
703/549-6080

Mar. 15-17, 1982 San Francisco

Sheraton Palace
415/392-8600

Tuition:

Through December 31, 1981:

\$570 per person if payment is received by CDMI prior to start of seminar, or \$615 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

MBA STRATEGIES FOR DECISION MAKERS



Purpose:

As the businessworld has grown more complex, the field of management has become more scientific. An indication of this is the increased number of managers holding an MBA degree. At the same time, however, many qualified individuals have reached their position of management through technical expertise.

MBA Strategies for Decision Makers is a systematic and comprehensive survey of the major topics presented in a professional MBA program. The emphasis of this four day seminar is how the modern business organization functions and how you can apply MBA theories to your professional decision making.

Who Should Attend:

Professionals who want to expand their exposure to the newest quantitative and behavioral methods and ideas, particularly those outside their immediate areas of expertise.

Program:

- **MANAGERIAL ECONOMICS**
 - A. Fixed, variable, marginal, incremental and opportunity costs
 - B. Demand analysis and forecasting
 - C. Price elasticity of demand
 - D. Pricing methods
 - E. Cost/Volume/Profit Analysis
- **MARKETING**
 - A. Segmentation and target marketing
 - B. The promotional mix
 - C. Sales force management
 - D. Media solution
 - E. Statistical distribution methods
- **ACCOUNTING**
 - A. Overview of financial accounting reporting process
 - B. Understanding financial statements
 - C. Fixed and variable cost analysis
 - D. Break-even analysis
 - E. Relevant cost for decision-making purposes
 - F. Managerial cost accounting
 - G. Static and flexible budgeting
 - H. Standard cost and production variance analysis
 - I. Techniques for control of decentralized and profit center operations

- **FINANCE**
 - A. Budgeting and control systems
 - B. Major sources and form of short-term financing
 - C. Cash flow and cash management
 - D. Capital budgeting methods and techniques
 - E. Long-term financing methods
- **OPERATIONS MANAGEMENT**
 - A. Management Information systems
 - B. Linear programming
 - C. Queuing models (waiting line)
 - D. PERT CPM
 - E. Statistical decision making
- **HUMAN RESOURCE MANAGEMENT**
 - A. Staffing
 - B. Performance Evaluation
 - C. Employee and manager development
 - D. Compensation
- **MANAGERIAL LEADERSHIP AND MOTIVATION**
 - A. Leadership
 - B. Communication
 - C. Motivation
 - D. Organizational structure
- **BUSINESS POLICY AND STRATEGY FORMULATION**
 - A. Goal setting and policy formulation
 - B. Strategy formulation
 - C. Environmental factors/opportunities and threats
 - D. Evaluation of strategy
 - E. Implementation
 - F. Strategic versus operational planning

Seminar Leaders:

Four of the following professional lecturers will participate in the presentation of this seminar.

DR. EUGENE R. KOTZ is President of Business Resource Group Education, Inc., an organization that provides specialized seminars for the development of middle managers.

MR. DOUGLAS A. NELSON, M.B.A., is a Senior Management Consultant with A.E. Getzler and Co., Inc., specializing in Marketing and Operations.

MS. ERICA WHITTLINGER is the Managing Director of Business Resource Group, a management consulting firm.

DR. THOMAS H. RESSLER is an operations research specialist with considerable industrial experience in operations management, data processing and statistics.

MR. FREDERICK W. FORD is Vice President of Personnel for B. Dalton Booksellers, and has previous experience with Burlington Northern and Control Data Corporation.

DR. PHILIP H. ANDERSON is a specialist in business policy, group decision making and organizational theory.

MR. JOHN A. HANSON is Vice President of Personnel for MINNEGASCO. Mr. Hanson has many years' experience in public and private personnel administration.

DR. MELVIN D. WILLIAMS has extensive consulting experience in corporate financial matters for large and small business firms. He lectures frequently to professional and service organizations regarding financial strategies for institutions and individuals.

Dates and Locations:

- Sept. 21-24, 1981 Washington, DC**
Tyson's Corner Marriott
703/734-3200
- Oct. 27-30, 1981 San Francisco**
Amfac Hotel, S.F. Int'l Airport
415/347-5444
- Nov. 16-19, 1981 New York**
Barbizon Plaza
212/247-7000
- Dec. 14-17, 1981 Washington, DC**
Twin Bridges Marriott
202/628-4200
- Jan. 18-21, 1982 Houston**
Hyatt Regency
713/654-1234
- Feb. 8-11, 1982 San Francisco**
Sheraton Palace
415/392-8600
- Mar. 8-11, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:
\$670 per person if payment is received by CDMI prior to start of seminar, or \$715 per person if CDMI invoices after seminar.

Effective January 1, 1982
\$745 per person if payment is received by CDMI prior to start of seminar, or \$795 per person if CDMI invoices after seminar.

NEGOTIATIONS SKILLS WORKSHOP



Purpose:

Negotiation is the process by which parties with conflicting interests attempt to resolve their differences. Your objectives in negotiations are to be persuasive — to know when to compromise — to win! **Negotiations Skills Workshop** will show you how.

Participants Will Learn:

- How to create negotiation positions and strategies, and to create the climate which best fits the situation
- How to analyze both parties' objectives and psychological power
- How to "read" the opposition: how to learn their last, best and final position; their priorities; their strategy; and disagreements within their team (and how to take advantage of these.)
- When to take a hard or soft line, how to trade small or large concessions, and how to create momentum without making unnecessary concessions
- Their own strengths and weaknesses as negotiators

Who Should Attend:

Managers, Supervisors, Administrators, Program Managers, Project Leaders, Consultants, Coordinators, Sales Personnel, Purchasing and Buying Professionals and others who must negotiate either within or outside their organization.

Program:

Why Many People Are Reluctant to Bargain

- How to overcome personal inhibitions and capitalize on those of other people

The Negotiating Process and Its Conflicting Sub-Processes

- Pure bargaining (zero-sum bargaining)
- Joint problem solving
- Attitude structuring
- Intra-organizational bargaining

The Silent Language of Nonverbal Communication

The Essential Rituals of the Bargaining Process

The Critical Goal — Winning (Without Making the Other Party Feel That He/She Has Lost)

Special Feature:

Negotiating is a skill which can be learned only through practice and feedback. Each participant will negotiate several one-to-one and inter-team agreements. Some negotiations will be videotaped, replayed and intensively critiqued. All participants will receive detailed oral and written feedback on their own individual strengths, weaknesses and negotiating styles.

Seminar Leaders:

DR. ALAN SCHOONMAKER has consulted on all six continents for more than 50 corporations and government agencies. He has been a professor at UCLA and Carnegie-Mellon University, and has also had several years of practical selling experience. He designed the "Negotiating Skills Workshop" which won *Sales and Marketing Management Magazine's* "Excellence in Sales Training" award for Control Data in 1977.

CHARLES HOLCOMBE is President of Video Training and Marketing, a consulting firm specializing in the use of video in the training environment. Formerly head of sales training for Control Data Corporation, Mr. Holcombe has been in the field of education and training for the past 13 years and has taught sales training classes throughout the United States, Canada, South America and Europe during that time.

Dates and Locations:

- Sept. 9-11, 1981 Washington, DC**
Rosslyn Westpark
703/527-4814
- Sept. 22-24, 1981 San Francisco**
Holiday Inn-Union
Square
415/398-8900
- Oct. 14-16, 1981 New York**
Barbizon Plaza
212/247-7000
- Nov. 3-5, 1981 Minneapolis**
Minneapolis Hilton Inn
612/331-1900
- Jan. 20-22, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000
- Feb. 17-19, 1982 Houston**
Hyatt Regency
713/654-1234
- Mar. 17-19, 1982 Minneapolis**
Rodeway Inn
612/854-3400

Tuition:

\$625 per person if paid prior to start of seminar, or \$670 per person if invoiced after seminar.

OFFICE AUTOMATION: CONCEPTS, SYSTEMS AND IMPLEMENTATION



Purpose:

The changes that are occurring in the office and administrative environments today are more dramatic and significant than ever before. The advent of office automation will revise organizations, change established processes and impact managerial operations. Unless the office automation approach is carefully planned and implemented, the resulting disruptions and chaos could impair organizational performance and eliminate the anticipated benefits.

This program covers the entire spectrum of currently available office automation systems, products and concepts. It reviews the case histories of several firms that have committed to office automation and explores the current spectrum of research and vendor product directions. Currently available technology is evaluated as a building block basis. All technology is presented in non-technical terms and is evaluated in terms of the goals and objectives of the organization.

This seminar is ideally suited for organizations considering their future administrative systems. It will concentrate on productivity potentials and organizational absorption as well as the tools necessary to plan, analyze and implement effective office automation processes.

Who Should Attend:

This seminar is a must for managers, technicians and planners who are currently working in administration and information management. It is also designed to address the issues that are of concern to data processing professionals, word processing supervisors, MIS managers, systems planners, communications specialists, organizational planners, office administrators, information resource managers and management consultants. This program will be valuable for organizations who have installed successful word processing and data processing systems and are now considering the pursuit of the next stages of administrative and data automation.

Program:

Office Automation Pressures

- Technology Capabilities
- User Needs
- Management Demands
- Decision Support Services
- Interaction Levels

The Building Blocks

- Text Processing and Control
- Word Composition Systems
- Records Management
- Network Facilities
- Computer Interfaces
- Microelectronics Components

Fundamental Data Streams

- Correspondence Flow
- Data Entry
- Shared Data Bases
- Organizational Performance Information
- Data Integration and Access

Technology Tools

- Personal Terminals
- Information Storage Media
- Source Data Automation
- Date Access Processes
- Image Reproduction
- Processing Units
- Archival Systems

Interconnection and Integration

Philosophies

- Communication Networks
 - External
 - Internal
- Satellite Networks
- Archive Networks
- Public Data Bases
- Distributed Systems
- Electronic Mail

The Decision Structure

- Strategic Directions
- Readiness Tests
- The Phasing
- When to Face Vendors
- The Commitments

Organizational Processes

- Planning and Preparation
- Feasibility Surveys
- Pilot Test Models
- Training and Education
- Case Studies on Current
 - Automated Office Users
- Organization Revisions
- Activity Redistribution
- Relational Balance
- Personnel Considerations
- Long Range Plans

Systems Implementation

Considerations

- Setting Action Plans
- Management Commitments
- Success Criteria
- Base Level Systems
- Measuring/Evaluating Systems
 - Performance
- Integration Levels and Controls
- Managing for Success

Future Trends

- Equipment and Products
- Multi-Function Terminals
- Voice Interfacing
- Service Networks
- Organizational Changes and Adjustments
- Responsibility Shifts
- Controls/Limits on Advancement
- Keys to Success

Seminar Leaders:

This seminar has been developed by International Management Services, Inc., (IMS). Each seminar will be taught by a staff consultant for IMS.

Dates and Locations:

- Sept. 9-11, 1981 Washington, DC**
Tyson's Corner Marriott
703/734-3200
- Oct. 7-9, 1981 San Francisco**
Amfac Hotel, S.F. Int'l
Airport
415/347-5444
- Nov. 4-6, 1981 Minneapolis**
McGuire's Inn
612/636-4123
- Dec. 16-18, 1981 Washington, DC**
Twin Bridges Marriott
202/628-4200
- Jan. 25-27, 1982 Houston**
Stouffer's Greenway
Plaza
713/629-1200
- Feb. 17-19, 1982 San Francisco**
Jack Tar
415/776-8200
- Mar. 15-17, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000

Tuition:

Through December 31, 1981:

\$550 per person if payment is received by CDMI prior to start of seminar, or \$595 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$595 per person if payment is received by CDMI prior to start of seminar, or \$645 per person if CDMI invoices after seminar.

PRODUCTIVITY IMPROVEMENT THE AMERICAN CHALLENGE



Purpose:

American Business is in the midst of the most serious challenge it has ever faced. For the past ten years, a company's real value of production per worker has fallen to the point where it is often difficult to compete in markets, where complete superiority was once enjoyed.

Productivity Improvement — The American Challenge is designed to provide managers with a comprehensive orientation to productivity problems and key concepts and methods for their solution. You will leave this seminar with an understanding of how to address productivity issues in your own organization and insights into potentially workable solutions.

Key Benefits for You and Your Organization:

- Recognize and understand the many factors leading to productivity problems
- Improve decision making ability which will contribute to higher levels of organization output
- Special attention — Production Systems Analysis, Management Control Strategies, integrating finance and production

Who Should Attend:

Managers, Supervisors, Executives, Consultants, Production Analysts in Manufacturing, R&D, Government, Social Services and other organizations.

Program:

Defining the Problem

What is Productivity... Really?

Learn how productivity is really a measure of management effectiveness

Dimensions of Productivity

Criteria for determining the productive mix of organizational factors

Controllable vs. Uncontrollable Factors Effecting Productivity

Is Your Company on the Japanese Ministry of International Trade and Industry's "hit list" for the '80's?

The Facts — Where We Are — Where We Are Going

Roadblocks You Should Know About — and the Detours

Foreign Competition

- Price Competition
- R&D Leadership
- Government Subsidization
- Alternations in Market Leadership

Government Policy

- Taxation and Investment Credit
- Compliance Requirements
- Public Sector Growth
- Deficit Spending
- Economic Intervention

Inflation

- Erosion of profits
- Acceleration of Wage costs
- Unpredictable economic future
- Devaluation of Capital

The Dollars and Cents of Productivity — A Review of Key Economic Factors

- Mixing Resources for Results

Measuring Productivity — A Challenging Task!

- How Much Measurement is Enough?
- Trials and Errors
- Approaches to be Used
- Costs and Benefits of Measurement
- Measuring the Difficult to Measure
- Baseline Accounting for all Managers
- Goal Attainment Scaling
- R&D and Public Service Can Manage to Plan
- Cost/Income Flow Analysis
- The Production Function
- What We Know, What We Have Yet to Know
- Group Exercise — Measurement Tactics for Your Situation

Production Management

- The Dynamics of Production
- Production Control — The Special Concerns with Lead Times, Scheduling, and... Where Did the Inventories Go?
- Group Exercise — Getting the Picture of Your Situation

Human Resources and Productivity

- Human Resource Systems — Putting Training, People and Jobs Together
- "Cutting the Pie"
- Using All the Rewards More Effectively for Motivation
- The Competitive Advantages of Training — Handling "The Knowledge Depreciation" in the Work Force
- A Human Resource Plan for your Company
- Supervision

A Productivity Model

- Manageable Factors
- An Organizational Analysis
- Sketching Out Your Productivity Improvement Plan
- Supporting Systems You'll Need

Seminar Leader:

DR. WILLIAM AMMENTORP is a senior staff consultant for TECOS, Inc., and holds faculty rank at the University of Minnesota. He has served as a management trainer for 15 years, specializing in the behavioral sciences and computer-assisted management methods. Among his consultancies are Cargill, the Republic of Venezuela, the State of Minnesota, Honeywell, Anderson-Clayton and Microform Data Systems, Inc.

Dates and Locations:

Oct. 15-16, 1981 San Francisco

Holiday Inn-Union Square
415/398-8900

Nov. 19-20, 1981 Washington, DC

Twin Bridges Marriott
202/628-4200

Dec. 17-18, 1981 New York

Biltmore
212/661-1717

Jan 28-29, 1981 Houston

Stouffer's Greenway Plaza
713/629-1200

Feb. 8-9, 1982 Washington, DC

Twin Bridges Marriott
202/628-4200

Mar. 15-16, 1982 San Francisco

Sheraton Palace
415/392-8600

Tuition:

Through December 31, 1981:

\$410 per person if payment is received by CDMI prior to start of seminar, or \$455 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$435 per person if payment is received by CDMI prior to start of seminar, or \$485 per person if CDMI invoices after seminar.



Purpose:

Change and stress are facts of life in today's fast-paced world. With the link between stress and physical and mental health becoming more clear, people are looking for practical and workable ways to cope with the major stress producers in their lives. This seminar presents recent stress findings and medical research that bear on our personal happiness and productivity. It reviews the nature of stress in today's world, its impact on our work and personal lives and what we can do to manage stress. You will examine your optimal stress level, your vulnerability to stress-related illness, your hidden stressors, your innate stress-coping reserve and specific strategies for coping with specific types of stressors.

Program:

What Is All This Stress "Stuff" — Anyway?

- Stress as ally and enemy
- Evolution and our modern day sabre-toothed tigers
- Change and stress

The Stress Connection — The Relationship Between Physical and Mental Breakdown

- Your body's turn-on and turn-off switches
- What happens when your body can't turn off
- Change and illness
- Managing stress

Optimal Stress — Is It Possible?

- Your body's innate stress-coping reserves
- Your most productive stress level
- Good and bad ways to adapt to stress
- Connections between stress and aging

What Do You Mean, "It's All in My Head?" — The Old Mind and Body Dilemma

- Real and imagined dangers
- Thinking and stress
- Emotions and stress
- Effects of prolonged emotional reactions
- Frustration and stress
- Managing stress

Personality and Lifestyle — How Who You Are Affects How Stressed You Get

- The stress-prone personality
- Attitude and health
- Managing stress

People Give Me a Pain in the Neck — Social and Interpersonal Stress

- Conflict, confrontation and the bottom line
- Why it is difficult to leave home at home and work at work
- What people are important
- Human beings as social animals
- Managing stress

Where It All Comes Together — Organizational Stress

- Conflict, confrontation and the bottom line revisited
- Your most stressful work problems
- Role clarity, goal clarity, authority and responsibility
- Tolerating ambiguity
- Support networks
- Managing stress

Seminar Leader:

DR. VAL J. ARNOLD is a consultant with Personal Decision, Inc., a Minneapolis-based consulting firm that applies the findings of psychology to solve problems for business and industry. Additionally, Dr. Arnold has worked in the mental health care community, has been Executive Development Consultant for Control Data Corporation's Human Resources Planning and Development area, and has been a consultant with Kiel and Associates, a consulting firm assisting executives in acquiring stress-coping, communications and people management skills.

Dates and Locations:

Sept. 21, 1981	New York New York Sheraton 212/484-3314
Oct. 26, 1981	Minneapolis L'hotel Sofitel 612/835-1900
Oct. 28, 1981	Minneapolis L'hotel Sofitel 612/835-1900
Nov. 2, 1981	Washington, DC Twin Bridges Marriott 202/628-4200
Dec. 14, 1981	San Francisco Holiday Inn-Union Square 415/398-8900
Jan. 25, 1982	Minneapolis Rodeway Inn 612/854-3400
Feb. 8, 1982	Washington, DC Holiday Inn Bethesda 301/652-2000
Mar. 8, 1982	Houston Stouffer's Greenway Plaza 713/629-1200

Tuition:

Through December 31, 1981:

\$190 per person if payment is received by CDMI prior to start of seminar, or \$235 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$215 per person if payment is received by CDMI prior to start of seminar, or \$265 per person if CDMI invoices after seminar.

SUPERVISORY SUCCESS:

Build self-reliant supervisors with how-do-it skills



Purpose:

As a first line supervisor, you have reached a significant crossroads in your professional career. In the past, your advancements and successes were based on skills and technical abilities. Now, you have a major added responsibility: **motivating, leading and supervising the work of others.**

It is a familiar pattern — a superior worker promoted to a supervisory function without receiving any formal training. This situation can have harmful consequences to the company, workers, and the professional career of the new supervisor.

Supervisory Success is a comprehensive seminar designed to differentiate between doing and supervising work. New (or prospective) first-line supervisors who have not received formal training in the areas of management concepts and human relations skills will find this two and one-half day program practical, motivating and informative.

Program:

Making the Change from Worker to Supervisor

- The differences between doing and supervising
- the basic concepts of management
- three sets of required supervisory skills
- A management application game

Human Relations Skills

- Understanding human factors
- Handling human relations problems
- Supervising by individual differences
- Dealing with the problem employee
- Counseling skills

The Motivation Process

- The dynamics of motivating others
- The hierarchy of human needs
- The instinct reactions model
- Building motivational strategies

Improving Communications Skills

- Overcoming communication barriers
- How to plan an effective communication
- Giving information and directions
- How to get information from others
- Techniques to generate feedback

Planning Skills

- Differences between work planning and work scheduling
- Techniques to improve work scheduling effectiveness
- Improving time management skills

The Nature of Leadership

- Differences between management and leadership
- The two concerns of leadership
- Developing personal leadership skills
- Applying leadership to situations

Seminar Leader:

JIM VAN LARE is the President of Training By Design, Inc., a New York City based management development and training organizations. Their clients include Cessna Aircraft, the Philadelphia Electric Company, Virginia Electric Power Company, Boeing Aerospace, American Monarch, New Jersey Bell Telephone and Johnson's Wax. Mr. Van Lare is the author of numerous training programs including 'Leadership and Motivation: The Influence Process,' 'Improving Communication Skills,' 'The Secretary as Manager,' and 'Improving Managerial Effectiveness.' He has consulted to major organizations in North America, South America and the Middle East. Prior to founding Training By Design, he was Vice President of In-House Training and Development for the American Management Associations.

Dates and Locations: (2½ days)

- Sept. 28-30, 1981 New York**
New York Sheraton
212/484-3314
- Oct. 12-14, 1981 Minneapolis**
Minneapolis Hilton Inn
612/331-1900
- Oct. 21-23, 1981 Washington, D.C.**
Hyatt Arlington
703/841-9595
- Nov. 16-18, 1981 Houston**
Marriott West Loop
713/960-0111
- Dec. 7-9, 1981 San Francisco**
Holiday Inn-Fisherman's Wharf
415/771-9000
- Jan. 25-27, 1981 New York**
NY Sheraton
212/484-3314
- Feb. 8-10, 1982 Houston**
Stouffer's Greenway Plaza
713/629-1200
- Mar. 8-10, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000
- Mar. 15-17, 1982 San Francisco**
Jack Tar
415/776-8200

Tuition:

Through December 31, 1981:
\$485 per person if payment is received by CDMI prior to start of seminar, or \$530 per person if CDMI invoices after seminar.

Effective January 1, 1982
\$525 per person if payment is received by CDMI prior to start of seminar, or \$575 per person if CDMI invoices after seminar.

THE SECRETARY AS A MANAGER



Purpose:

Perhaps no office position has evolved more than the secretary. Among the new responsibilities are: planning, customer contact, and coordination of projects and the work schedules of other staff members. Secretaries often find themselves delegated to MANAGE.

The Secretary as a Manager is a seminar for secretaries and office managers that provides valuable insight into the function and role of the manager. Here is your opportunity to develop the knowledge and personal skills needed to perform these new functions confidently and effectively.

Key Benefits for You and Your Organization:

- Learn basic rules and **methods of management** necessary for successful business operations
- Develop interpersonal **communication skills**
- Improve **public relations** skills
- Understand techniques for **time management** and work scheduling

Program:

The Concepts of Management

- Differences between doing work and managing work
- The concepts of planning, organizing, controlling and evaluating
- Required skills — 'rational,' interpersonal and technical
- Building managerial competence

Time Management

- Determining performance objectives
- Identifying and minimizing time wasters
- Maximizing time savers
- Techniques for more effective work scheduling
- Improving time management for your boss and others
- Communicating your time management strategy
- Finding time for self-development

Interpersonal Communication Skills

- Overcoming barriers to effective communication
- The communication process
- Organizing 'messages'
- Planning, organizing and controlling communication flow
- How to generate feedback
- Techniques for getting and giving information

Improving Human Relations Skills

- Five bases of interpersonal power
- The instinct reactions model
- Techniques for improving interpersonal relationships
- The effective use of 'influence' in dealing with others

Internal and External Public Relations Skills

- Creating public relation images
- 'Response' roles
- Developing interpersonal rapport
- Managing anger and tension in others

Problem Solving and Decision Making

- Force field analysis
- New vs. returning problems
- Problem analysis for the managerial secretary

Seminar Leaders:

JIM VAN LARE is the President of Training By Design, Inc., a New York City based management development and training organization. Mr. Van Lare is the author of numerous training programs including 'Leadership and Motivation: The Influence Process,' 'Improving Communication Skills,' 'The Secretary as Manager,' and 'Improving Managerial Effectiveness.' He has consulted to major organizations in North America, South America and the Middle East. Prior to founding Training By Design, he was Vice President of In-House Training and Development for the American Management Associations.

Dates and Locations:

- Sept. 10-11, 1981 Washington, DC**
Tyson's Corner Marriott
703/734-3200
- Oct. 1-2, 1981 New York**
New York Sheraton
212/484-3314
- Oct. 15-16, 1981 Minneapolis**
Minneapolis Hilton Inn
612/331-1900
- Nov. 12-13, 1981 Houston**
Marriott Brookhollow
713/688-0100
- Dec. 10-11, 1981 San Francisco**
Holiday Inn-Union Square
415/398-8900
- Dec. 14-15, 1981 Washington, DC**
Twin Bridges Marriott
202/628-4200
- Jan. 11-12, 1982 Minneapolis**
L'Hotel Sofitel
612/835-1200
- Jan. 13-14, 1982 Minneapolis**
L'Hotel Sofitel
612/835-1200
- Jan. 28-29, 1982 New York**
NY Sheraton
212/484-3314
- Feb. 11-12, 1982 Houston**
Stouffer Greenway Plaza
713/629-1200
- Mar. 11-12, 1982 Washington, DC**
Holiday Inn Bethesda
301/652-2000
- Mar. 18-19, 1982 San Francisco**
Jack Tar
415/776-8200

Tuition:

Through December 31, 1981:

\$410 per person if payment is received by CDMI prior to start of seminar, or \$455 per person if CDMI invoices after seminar.

Effective January 1, 1982

\$435 per person if payment is received by CDMI prior to start of seminar, or \$485 per person if CDMI invoices after seminar.

TOTAL TIME MANAGEMENT



Course Description:

Total Time Management is a one-day workshop for managers with supervisory responsibilities. The Workshop provides a profile of managerial and executive effectiveness and distinguishes perspectives and skills managers use to enhance their personal productivity and work more effectively with superiors, colleagues, and subordinates. Interactive and individual exercises provide opportunities to compare notes with other participants and adapt workshop concepts and materials to individual work situations.

IN ONE DAY, YOU'LL LEARN...

- What it takes to use time effectively,
- How to build habits, attitudes, skills to make it happen

Who Should Attend:

Managers and supervisors with from 3 to 30 employees in both public and private sectors. Course has applications in data processing, finance, auditing, marketing, administration, human resources, and other functions.

Participants are encouraged to bring their appointment books and worksheets with them to the course.

Course Outline:

GETTING ORGANIZED

- What your office says about your time management ability and style.
- How to plan, organize, and control your work.
- Five avoidable reasons why managers don't get more accomplished.
- How to get full value from routines, plans, and to-do lists.

ESTABLISHING JOB PRIORITIES

- How to clarify and articulate job priorities.
- Working with nonquantifiable results.
- Making time available for accomplishing top priorities.
- Reconciling priority conflicts.
- Identifying work that cannot be delegated.

MANAGING INDEPENDENT AND RESPONSE TIME

- The differences between independent and response time.
- How effective communication alleviates job pressures and helps avoid crises.
- How age and job responsibilities affect time management.
- Developing realistic expectations and skills in handling interruptions.
- Guidelines for negotiating time demands.

DEVELOPING A FIRST-AID KIT TO MANAGE TIME

- Making more accurate time estimates.
- Anticipating problems.
- Overcoming procrastination.
- Using behavioral modification techniques on the job.
- Building and using a Master Control Book.
- How to handle the major time waster — interruptions!

Seminar Leader:

Rosalind Gold is a faculty instructor for Training By Design Inc., a New York City based management development and training organization. Their clients include Cessna Aircraft, the Philadelphia Electric Company, the City of Wichita, Rockefeller Center Inc., and numerous other organizations. Miss Gold is the author of "The Essentials of Management Practice", "Total Time Management" and "Managerial Planning, Organizing, and Controlling." She has consulted to Equitable Life Insurance, McGraw Hill and conducts extensive research in the area of time management.

Dates and Locations:

Oct. 22, 1981	New York Barbizon Plaza 212/247-7000
Oct. 23, 1981	Minneapolis Rodeway Inn 612/845-3400
Dec. 2, 1982	San Francisco Holiday Inn-Union Square 415/398-8900
Dec. 4, 1981	Houston Marriott West Loop 713/960-0111
Dec. 10, 1981	Washington, DC Holiday Inn Bethesda 301/652-2000
Jan. 11, 1982	Minneapolis Rodeway Inn 612/845-3400
Feb. 22, 1982	New York Barbizon Plaza 212/247-7000
Mar. 15, 1981	San Francisco Holiday Inn-Union Square 415/398-8900
Mar. 17, 1982	Houston Marriott West Loop 713/960-0111

Tuition:

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REGISTRATION

TWO WAYS TO REGISTER

- 1) Call the Institute's Registrar toll-free **800-638-6590** between 9:00 a.m. and 5:00 p.m. Eastern Time. (In Maryland, 301-468-8576)
- 2) or, complete a Registration Form below and mail it to:

Registrar, Institute for Advanced Technology, Control Data Corporation, 6003 Executive Boulevard, Rockville, MD 20852

Attendance is limited; therefore, early registration is recommended.

TEAM DISCOUNT

For every three registrants from a single organization who register together and attend the same seminar, one additional registrant from the same organization can attend **free**. As an example, if one organization sends six individuals to a three-day seminar, two additional individuals can attend free — representing a **savings** of as much as \$1,590 in tuition fees.

SEMINAR HOURS

Seminar hours are from 9:00 A.M. to approximately 4:30 P.M.

HOTEL ACCOMMODATIONS

IAT does not arrange personal hotel accommodations. Reservations should be made directly with the hotels as soon as possible. Please mention the Institute for Advanced Technology when making reservations.

IN-HOUSE SEMINARS

Seminars described in this catalog are available to be presented at your site. This usually results in substantial savings to an organization in cost of fee, travel and living expenses. For further information, please call the Institute's Registrar, or check the "in-house" box on a Registration Form below and mail it to the Institute.

CANCELLATIONS POLICY

Cancellations within 2 weeks of the seminar date are subject to a charge of 25% of the registration fee. There is no charge for substitutes.

REGISTRATION FORM

IAT-81-REV 123

Please register the following person(s) in the seminar indicated below:

Seminar _____	Date _____	Location _____
Name (1) _____	Title _____	
(2) _____	_____	
(3) _____	_____	
Free (4) _____	_____	
Organization _____	Check Appropriate Box	
Address _____	☐ Registration Tuition Enclosed	
City _____	☐ Bill My Organization	
State _____ Zip _____	☐ Please send information on in-house seminars	
Telephone () _____		

Return this form to Registrar — IAT, Control Data Corporation, 6003 Executive Boulevard, Rockville, Md. 20852 (301/468-8576)

REGISTRATION FORM

IAT-81-REV 123

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Seminar _____	Date _____	Location _____
Name (1) _____	Title _____	
(2) _____	_____	
(3) _____	_____	
Free (4) _____	_____	
Organization _____	Check Appropriate Box	
Address _____	☐ Registration Tuition Enclosed	
City _____	☐ Bill My Organization	
State _____ Zip _____	☐ Please send information on in-house seminars	
Telephone () _____		

Return this form to Registrar — IAT, Control Data Corporation, 6003 Executive Boulevard, Rockville, Md. 20852 (301/468-8576)

A partial list of organizations that have participated in Institute for Advanced Technology Seminars

Aetna Life Insurance Company	Naval Air Development Center	Carnegie Mellon University	Norwalk Police Department
National Advanced Systems Corporation	New York Telephone	Price Waterhouse and Company	Brookhaven National Laboratory
Phillip Morris	United Parcel Service	Doubleday and Company	Automatic Data Processing
Federal Reserve Bank of Minneapolis	Blue Cross and Blue Shield	W.R. Grace and Company	Ryder Truck Rental
Morgan Guaranty Trust Company	National Institutes of Health	Land O'Lakes, Inc.	Holiday Inns, Inc.
Toledo Scale	Naval Military Personnel Command	Marathon Oil Company	Airborne Freight Corporation
Internal Revenue Service	Intel Corporation	The Upjohn Company	Hanes Hosiery
Coopers and Lybrand	Johnson and Johnson	AMP, Inc.	Planning Research Corporation
Standard Oil Company	U.S. Coast Guard	Ralston Purina	Connors Steel
Suburban Propane Gas	National Cash Register	Wells Fargo Bank	Caterpillar Tractor Company
Naval Electronic Systems Command	American Telephone & Telegraph	Olin Corporation	Kansas State University
Polaroid Corporation	Ford Motor Company	Navy Federal Credit Union	U.S. Patent and Trademark Office
North American Van Lines	Federal Reserve Bank of New York	Vydec, Inc.	Dow Corning Corporation
Merck and Company	PPG Industries	Sperry Univac	M&M/Mars, Inc.
Mobil Oil Company	TRW Systems Group	J.C. Penney Company	Perkin-Elmer Corporation
Haggar Slacks	Sandia Laboratories	Florida Power Corporation	Levi Strauss & Company
Department of Commerce	Boeing Computer Services Company	Gulf and Western Industries	Dart Industries
Joy Manufacturing Company	Digital Equipment Corporation	Cessna Aircraft Company	General Tire and Rubber Company
EXXON Corporation	U.S. Army	Interstate Brands Corporation	Mead Corporation
Manufacturers Hanover Trust	Tektronix	Chevron Oil Company	Sundstrand Corporation
Security Pacific National Bank	Martin-Marietta Corporation	Naval Ordnance Station	Four Phase Systems, Inc.
University of California	Phillips Petroleum	Chemical Abstracts Service	Bureau of the Census
Connecticut General Life Insurance Company	Naval Underwater Systems Center	Volvo of America	The World Bank
Quaker Oats Company	Environmental Protection Agency	Federal Deposit Insurance Corporation	Cincom Systems, Inc.
American Airlines, Inc.	U.S. Department of Commerce	Aspen Systems Corporation	Pizza Hut
Educational Testing Service	Computer Sciences Corporation	Federal Communications Commission	American Optical Corporation
Dow Chemical	United Telecommunications	Martin Marietta Data Systems	Crown Zellerbach
Hughes Aircraft Company	Los Alamos Scientific Labs	Kimberly Clark Corporation	Wright and McGill Company
TENNECO, Inc.	IBM Corporation	Plastic Manufacturing Company	Pella Rolscreen Company
Kaman Sciences Corporation	Bechtel Corporation	The Regis Corporation	Hydril Company
Atlantic Richfield Company	The Flintkote Company	Dell Publishing Company	Klopman Mills
Tennessee Valley Authority	Western Electric Company, Inc.	Peat, Marwick, Mitchell & Company, Inc.	Continental Grain Company
Lawrence Livermore Laboratory	Rockwell International	Perdue, Inc.	MRI Systems Corporation
National Oceanic & Atmospheric Administration	Bank of America	Monsanto Company	Naval Research Laboratory
Vandenberg Air Force Base	Honeywell	Greyhound Lines, Inc.	Cities Service Oil Company
McDonnell-Douglas Aircraft Company	Recognition Equipment, Inc.	Sloan-Kettering Institute	Esmark, Inc.
Seattle First National Bank	Mountain Bell	Metropolitan Life Insurance Company	International Paper Company
Social Security Administration	Bell Telephone Laboratories	General Electric Company	McGraw-Hill, Inc.
Naval Surface Weapons Center	Litton Microwave	Shell Development Company	Hoffman-LaRoche, Inc.
NASA/Goodard Space Flight Center	Library of Congress	Cutler-Hammer, Inc.	Sandoz Pharmaceuticals
U.S. Postal Service	Lehigh University	Prudential Insurance Company	Pan American Airways
Bell and Howell	General Dynamics	Cray Research, Inc.	Babcock and Wilcox
Emhart Corporation	Denny's Incorporated	Adolph Coors Company	Southwestern Bell
AMTRAK	Victoria Station	Leggs Products	Aramco Services Company
Getty Refining and Marketing Company	Harris Corporation	Occidental Petroleum Services	Harley-Davidson
U.S. Department of Transportation	Essex Group	Walter Reed Army Medical Center	Alpha Industries
Maryland National Bank	Arthur Young and Company	Harris Semiconductor	National Bureau of Standards
GTE Data Services	American Can Company	U.S. Department of Defense	U.S. Air Force
Combustion Engineering	Broadcasting	George Washington University	Pitney Bowes, Inc.
Defense Mapping Agency	Sanders Associates	U.S. Geological Survey	Xerox Corporation
California Department of Social Services	Texas Instruments, Inc.	Stanford Research Institute	Eastman Kodak Company
	Securities and Exchange Commission	Booz Allen and Hamilton	Valley National Bank
	Amherst College	Raytheon Company	University of West Florida
	Union Carbide Corporation	Joseph Schlitz Brewing Company	U.S. Forest Service
	Ingersoll-Rand Equipment Corporation	General Foods Corporation	Simon and Schuster
		Chase Manhattan Bank	Spalding Corporation
			Remote Computing Corporation
			Lakewood Hospital
			Singer Company
			Emery Air Freight Corporation

INSTITUTE FOR ADVANCED TECHNOLOGY

6003 Executive Boulevard, Rockville, Md. 20852



Attention Mail Room

Attention Mail Room — If unable to deliver to addressee shown, please route this important dated announcement to your organization's Director/Manager of Data Processing, Training Director, or Director of Personnel.

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PO BOX 128
SWARTHMORE, PA 19081

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